MADRAS SURVEY MANUAL

VOLUME I

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THE MADRAS SURVEY MANUAL

OF

DEPARTMENTAL RULES

COMPILED UNDER THE ORDERS OF GOVERNMENT

BY

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(In Three Volumes)

VOLUME I

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PREFACE

The first edition of the Survey Manual was published in 1859. A second edition was issued in 1861. Both these Manuals dealt only with survey, as up to 1866, demarcation was done by the Settlement Department. That department issued a pamphlet in 1861 entitled " Rules for demarcation of boundaries for the revenue survey".

On the transfer of the work of demarcation to the Survey Department a " Revised code of rules for the guidance of the demarcation branch " was published in 1867.

For some years demarcation and survey were performed by separate Survey Parties. The Parties were amalgamated in 1873, and a Manual was published in 1874 embodying rules for both demarcation and survey. A revised and abridged edition was issued in 1888. In 1911 a new and most complete edition was compiled by the late Diwan Bahadur M.R.Ry. M. Ramaswami Nayudu.

Since then, the Madras Survey and Boundaries Act, No. IV of 1897, has been repealed and a new Act passed, and several changes and amendments have been made in the methods of survey.

The present Manual consists of three volumes. In the first it has been thought unnecessary to include the chapters in the preceding Manual giving the duties of officers, Sub-Assistant Directors, surveyors and clerks.

Those describing survey instruments and their use, and the chapter " Aids to surveying " have also been left out. These will form Volume II. All forms of registers, returns and reports in use and special to the Madras Survey Department have been revised and will be published as Volume III.

Valuable co-operation and assistance have been received from M.R.Ry. Diwan Bahadur D. Sesha Acharlu Garu, Officer-in-charge, Central Survey Office, from the late M.R.Ry. S. P. Venkatarama Ayyar Avargal, Assistant Director of Surveys and from M.R.Ry. K. N. Narasimha Acharya, Assistant Director of Surveys, Central Survey Office.

INTRODUCTION

In several districts of the Madras Presidency, registration and measurement of lands was undertaken during the first quarter of the 19th century.

The account prepared therefrom which is called the "paimash", consists of a list of lands described with reference to their relative position and their tenure at the time and contains their approximate areas calculated from measurements taken with a pole roughly in the direction of the cardinal points of the compass. The method of calculation of areas, called the khasra, was to multiply the mean of the north and south measurements by the mean of those east and west.

No maps were plotted from the paimash measurements, which were not only often inaccurate but also generally insufficient to enable boundaries to be located with any certainty.

2. In 1853, under the orders of the Madras Government an experimental revenue survey was commenced in the South Arcot district. During the two succeeding years the subject of the general survey of the whole Presidency was fully dicussed, and in December 1856 the Court of Directors sanctioned a scheme submitted by the Government of Madras and strongly and unanimously recommended by the Supreme Government. Shortly afterwards, a Superintendent of Revenue Survey was appointed and the required establishment having been sanctioned, the revenue or cadastral survey of the Presidency was commenced in 1858.

Cadastral Survey.

3. The object of a cadastral survey in the Madras Presidency is the delimitation of the boundaries of villages and holdings, and the preparation of (1) village maps showing the boundaries, of groups of holdings, called hereafter survey fields, and the more important topographical details, (2) large-scale plans of survey fields showing the boundaries of each holding, topographical details and all measurements, and (3) land registers giving the number, nature, tenure, area, assessment and reputed ownership of each holding.

A resurvey is made when the changes in occupation and in the boundaries of fields are too numerous to be dealt with by the Ordinary Revenue staff, or when the previous survey is considered defective.

A revision survey has been made in a few districts, The work done was the replacement of missing survey marks and the measurement of changes in occupation, or in the physical features of the country.

Revision surveys have been discontinued in favour of resurveys. A map is attached showing the revision surveys and resurveys made up to date, and the areas in which resurveys are in progress are likely to be necessary.

4. The present methods on which cadastral surveys and resurveys are made are described in detail in the several chapters of the Manual, while Appendix II shows the cadastral surveys made in each district of the Presidency and describes the methods of survey previously in use. With the exception of the block map surveys, which have been condemned and are to be done afresh, all these surveys are on a traverse basis, the traverses being connected with stations of the Great Trigonometrical Survey of India, and harmonized with reference to a district origin.

The maximum error possible in the odolite surveys is 6 feet a mile in co-ordinates. Under the present system, each village boundary is traversed and a number of interior traverses run, dividing each village into sub-circuits, called khandams of from 100 to 250 acres.

Each traverse station is marked by a granite stone 3'×9"×9". Each khandam is divided into survey fields generally of 5 acres in wet and 10 acres in dry lands. In most districts all bends of fields have been demarcated with granite stones 2'×6"×6", but stone demarcation is now being confined to trijunctions of survey fields and bends on boundaries of villages, poramboke fields and poramboke sub-divisions.

Fields are measured by chaining between trijunctions and offsetting all bends. Field boundary lines are also measured as a check on the offsets.

On completion of field measurements, lines are run between stations on village and khandam boundaries and trijunctions on the boundaries offsetted. Village maps are prepared by traverse plotting village and khandam stations, laying out the field trijunctions offsetted, and plotting the fields from these lines of basis.

Publication.

5. The usual maps issued are

(1) Maps of survey fields, scale generally 40"=1 mile showing the boundaries of holdings, topographical details, all measurements and the area of each survey fields.

(2) Village maps, scale 16"=1 mile. These show the boundaries of each survey field, all important topographical details and the area of the village.

(3) Outline sheets and traverse charts each 15' square, scale 1"=1 mile, for the use of the Topographical Parties of the Survey of India working in the Madras Presidency. The outline sheets show all main topographical details except hill contours. The traverse charts show village boundaries and the values of the rectangular co-ordinates of village trijunctions from the district origin.

(4) *Taluk and Zamindari maps.*—Scale 1"=1 mile showing village boundaries and notable topographical details.

(5) *District Touring maps.*—Scale 1"= 4 miles. These show towns, important villages and the most important topographical details.

6. Besides cadastral surveys of Government villages, the following special surveys are made as need arises :—

Survey of proprietary estates and villages.

Town survey.

Street survey and road surveys.

Mamul wet survey.

Soil block survey.

Survey of Proprietary Estates.

7. This is generally made on the application of the proprietor, and the method now in use is the Punganur system, so called because it was first employed in the survey of the Punganur estate. As a general rule a single diagonal line is run across each field, all field bends are offsetted thereon. There is thus material for calculating distances on field boundaries from two independent bases and measurement is not made unless the distances thus calculated differ by more than 4 links. The rest of the survey is made on the lines adopted in Government villages. This system provides an automatic check on measurement and is the

most accurate yet devised. It demands, however the demarcation with stone of bends on fields boundaries and for this reason is not likely to be adopted for the survey of Government villages.

TOWN SURVEY.

8. A survey of the Madras town was made by the Public Works Department between the years 1854 and 1864. The results of the survey were not wholly adopted in the revenue accounts, and a question having arisen as to the sufficiency of the survey, it was decided in 1891, that the survey maps were of little or no use for revenue purposes and quite out of date for topographical purposes, and a new survey was accordingly ordered.

It was considered necessary to make a survey of the mufassal municipal towns and to plot maps on a scale sufficient to make them useful for checking encroachments and defining limits of private and public properties.

9. Of the 61 municipal towns in the Presidency, the survey of 28 towns, viz.—

(1) Madras.
(2) Ootacamund,
(3) Coonoor,
(4) Vaniyambadi,
(5) Tiruppattur,
(6) Vellore,
(7) Walajapet,
(8) Tirupati,
(9) Gudiyattam,
(10) Conjeevaram,
(11) Thanjavur,
(12) Kumbakonam,
(13) Mayavarm,
(14) Tiruchinopoly,
(15) Srirangam,
(16) Madura,
(17) Dindigul,
(18) Periyakulam,
(19) Palani,
(20) Mangalore,
(21) Palghat,
(22) Coimbatore,
(23) Karur,
(24) Erode,
(25) Salem,
(26) Cuddalore,
(27) Mannargudi,
(28) Negapatam,

was completed by a special survey party between the years 1895 and 1901.

In the 20 towns first named, a map and a register were prepared for each of the blocks into which the town was divided, the size of the blocks being generally 10 acres, if the locality was close, i.e., densely occupied, and 40 acres, if it was medium or open. In the manuscript block map were recorded in blue ink all the measurements by which the block was plotted. From this map was prepared a field book, in which each holding was plotted roughly to scale, and for such of the lines as held actually been measured on the ground the measurements were copied in black ink from

the block map. The diagonal and offset measurements necessary for calculating the areas arithmetically were scaled from the block map and entered in the field book in blue ink. The manuscript maps which were plotted on a scale of 160 or 80 inches to the mile were printed on half scale.

In the remaining eight towns, the method of survey was the same as that described above, except that the size of the open blocks was fixed as 160 acres and the map was plotted on a scale of 40 inches to the mile. No field measurement book was prepared for the eight towns, but instead of one map there were three maps, called the rough block map, the fair block map and the record of measurement. The rough block map was prepared by the surveyor and showed all measurements and details in black ink. From this the fair block map was plotted in office and showed only the field boundaries and details. The record of measurements was prepared by copying the field boundaries, not details, from the fair block map and all measurements from the rough block map. The areas of rectangular fields alone were calculated arithmetically. The areas of other fields were taken by the computing scale from the fair block map. The fair block map was reduced to half scale, but the record of measurement was printed on the same scale. Steps have been taken to provide each of the first 20 towns also with a record of measurement similar to that prepared for the other 8 towns.

The town survey of Madras has recently been brought up to date by a special establishment working under a Special Land Records and Survey Officer.

The town of Ellore was surveyed in 1903 and 1904 by a detachment of a cadastral survey party on the method adopted for the last 8 towns.

Seven more towns, viz., Bezwada, Masulipatam, Anantapur, Calicut, Cannanore, Tellicherry and Cochin, were surveyed between 1890 and 1896, while the cadastral survey or resurvey of the taluks in which they are situated was in progress, but not in such detail as the above mentioned 29 towns. The scale of map of these seven towns varied from32 to 160 inches to the mile. When maintenance of the survey of the first 28 towns was taken up, the cadastral survey records of the seven towns were prepared in the Central Survey Office as far as possible on the town survey method with a view to introduce maintenance into them also. The actual work of maintenance having, however, proved the

inadequacy of the cadastral survey records for the purpose of maintenance, a fresh survey has been made of the towns of Bezwada and Masulipatam, and it is probable that the same will have to be made in the other five towns.

10. The following towns have been surveyed recently on the method described in sub-paragarph (3) of paragraph 9 above and the maps will be published shortly:—

Tiruvannamalai.	Narasaraopet.	Anakapalle.
Ellore extension.	Ongole.	Bimlipatam.
Chingleput.	Tenali.	Vizagapatam.
Dharapuram.	Bezwada.	Vizianagram.
Chicacole.	Bodinayakkanur.	Mayavaram extension.
P rlakimedi.	Srivilliputtur.	
Cocanada.	Tiruvalur.	Nagapatam ,,
Peddapuram.	Palamcottai.	Dindigul ,,
Rajahmundry.	Tinnevelly.	Coimbatore ,,
Guntur.	Tuticorin.	Madura ,,

11. The published maps of towns are on the scale 10″=1 mile and show the boundaries of wards, streets and properties. In future the scale 8″=1 mile will be adopted. Records of measurement are supplied to the municipal authorities on the scale of 160″, 80″ or 40″=1 mile according as the area is congested, medium or open.

STREET SURVEY AND ROAD SURVEYS.

12. *Street Survey.*—This is generally confined to streets within a union which does not desire a regular town survey. The records prepared are a map of the union, scale 40″=1 mile, showing the streets but no house-site details, and an atlas of street field maps, scale 160″=1 mile, showing measurements.

Roads Surveys are made of Local Fund roads in unsurveyed proprietary estates. The roads are traversed and surveyed as fields each about 10 inches long. These are plotted on the 40″ scale and show all measurements.

MANUAL WET SURVEY.

13. In the Godavari, Kistna and Guntur districts, owing to the introduction of large irrigation projects, considerable areas, which till then had been waste or only fit for dry cultivation were brought under wet cultivation. In order to levy water-rate on these areas, and also to determine the extent of "mamul wet" lands which had been deprived of their original sources of irrigation and were

entitled to water free of charge from the new canals, it was found necessary to make a detailed survey of the non-ryotwari villages in the deltas in these three districts. The mamul wet areas were demarcated *en block*. The newly irrigated areas outside the mamul wet blocks were formed into survey fields of about 10 acres each, and demarcated and measured. The registered holdings within the 10-acre fields were also measured. A field measurement book, field register and map were prepared for each village. For 56 out of 302 villages in the Godavari delta, village maps showing field boundaries were prepared on the 16-inch scale and printed on the 8-inch scale. In the remaining 246 villages the map served only as a key to the field measurement book, as it did not show the boundaries of each individual field but only of books of fields ; but at the request of Public Works Department, 8-inch village maps showing the boundaries of fields have been drawn and printed for all the 246 villages. The survey began in 1890 and was completed in 1896. The area surveyed was 1,226 square miles.

In the Ganjām district, a similar survey of inam villages, area 136 square miles, which had come under the influence of the Rushikulya system, was carried out between 1891 and 1894 under the supervision of the Collector.

Seven inam villages, area 19 square miles, irrigated by channels from the Pālār anicut in the Walajapet taluk, were also similarly surveyed under the orders of the Collector of North Arcot in the years 1904 and 1905.

Owing to the construction of the Peryāir Water-Works the non-ryotwari villages in the Mēlūr, Madura and Nila-kottai taluks, area 88 square miles, were also surveyed during the years 1896 to 1898. This survey was made in such detail that it was practically a cadastral survey.

SOIL BLOCK SURVEY.

14. For the pupose of determining the land cess, a block survey of whole inam villages was made in the districts of Gōdāvari, Kistna, Guntūr, Nellore, Tanjore and Trichinopoly in the Berhampur taluk and in the Serugada, Dharakota and Kurla estates of the Ganjām district, between the years 1895 and 1902. The villages were divided by settlement classifiers into blocks according to peculiarities of soil and demarcated with pegs or earthen mounds. The blocks were measured and mapped by the

Survey Department, and the areas of the blocks entered in the classification registers prepared by the Settlement Department. In the South Arcot district, both demarcation and survey were made by the Settlement Department. The Survey Department has since made their similar surveys in the districts of Vizagapatam, Madura, Rāmnād and Tinnevelly.

TOPOGRAPHICAL SURVEY.

15. The earliest topographical surveys were made by officers of the Madras Quartermaster-General's department at the end of the eighteenth century. The topographical survey of the Madras Presidency was completed by about the year 1840 and the results of the survey were embodied in 23 Ordinance sheets or, as they are called, sheets of the Atlas of India, published by the Surveyor-General's Office, Calcutta, on scale 1″=4 miles. The atlas sheets are revised at Calcutta from time to time as the materials of late topographical surveys and of cadastral surveys become available; they are published in quarter sheets. Up to date 39 quarter sheets relating to the Madras Presidency have been revised and published. The sheets of the Atlas of India are being gradually superseded by those of the degree sheet series. Forty-three of these have been published up to date.

16. When the cadastral survey of the Presidency was first instituted in 1858 the topographical survey, which had till then remained under the direction of the Surveyor-General, was amalgamated with the cadastral survey. Up to 1878, the topographical survey of hill tracts by the Madras SurveyDepartment was not based the any trigonometrical on points, the cadastral survey traverse stations at the foot of the hills being the only fixed points the topographical surveyors had for starting and closing their work. Since 1878, however, the topographical survey of the hill tracts of the Gōdāvari, Kistna and Guntūr districts, the Nallamalais in Kurnool, the Javadis in North Arcot. The Shevaroys and Kollimalais in Salem, the Wārsanad hills in Madura, the Biligirirangam hills and Anamalais in Coimbatore, the Attipadi valley in Malabar and South-East Wynaad in the Nilgiris was based on Madras Survey minor triangulation, starting from and closing on stations of the Great Trigonometrical Survey of India. The great and minor trigonometrical points were projected in office on the scale of 1 inch to the mile on plane table sheets on which was also plotted any traverse work that might have been executed in

the tract under survey. The sheets were then mounted on plane table heads and sent to field, where topographical features, such as hill, rivers, tanks, village sites, roads, etc., were delineated on them.

17. In the case of large zamindaris, such as Rāmnād and Sivaganaga, to which the operations of the cadastral survey did not extend, the exterior boundaries and some interior divisional lines were traversed with the theodolite and the traverse work was plotted on plane table sheets. In the case of proprietary estates and other non-ryotwari villages of small area which were often surrounded by ryotwari land, it generally happened that the true boundaries had already been demarcated and surveyed with the theodolite. For large zamindaris, the scale of the map was either 2 inches or 1 inch to the mile. For small proprietary estates, the scale was 4 or 2 inches to the mile.

18. The topographical survey was transferred to the Survey of India in 1886, and that department was expected to complete the survey of 13,508 square miles of country which had been excluded from the operations of the Madras Cadastral Survey in the districts of Ganjam, Vizagapatam, Trichinopoly, Madura, Tinnevelly, Malabar and South Kanara. A considerable portion of this area was surveyed during the course of forest surveys made by a Party of the Survey of India Department.

19. It has been stated in paragarph 16 above that the topographical survey of some of the hill tracts in the Presidency was made on a triangulation basis and that in other hill tracts the traverse station at the foot of the hills formed the only groundwork of the topographical survey. In both cases, the survey was defective inasmuch as the hill contours were not drawn with reference to heights.

20. During the years 1904 and 1905, the Indian Survey Committee appointed by the Government of India, and presided over by Mr. J. O. Miller, C.S.I., Secretary to the Government of India, visited the various provinces and discussed with the local authorities the materials available and the measures necessary for bringing up to date the topographical maps of India. As a result of the report of this Committee, the Government of India decided that a fresh topographical survey of the whole of India should be made by the Survey of India Department. This survey was commenced in the Madras Presidency in 1907, and in 1908 a conference of officers of the Survey of India and of the

Madras Survey was held at Bangalore to decide how far the Madras Survey professional data could be utilized by the Survey of India. It was first agreed that values of village trijunctions and selected theodolite stations should be supplied. Later, two outline sheets showing details according to the Madras Survey village maps were furnished for verifiication on the ground. The result having been found satisfactory outline sheets and traverse charts for various areas are being supplied since 1911.

CONSTITUTION OF THE MADRAS SURVEY DEPARTMENT.

21. The Director of Survey is the head of the department, and is subject to the supervision of the Commissioner of Revenue Settlement and Survey.

The normal strength of survey parties is six, each in charge of a senior Assistant Director. Under him are one junior Assistant Director and four Sub-Assistant Directors. There are generally three field sections, two for cadastral and one for theodolite surveys.

Each cadastral section is in charge of a Sub-Assistant Director, and is divided into two sub-sections each under a Head Surveyor. The strength of each cadastral survey sub-section varies according to the area for survey, but the minimum would be four ranges of nine field surveyors, each range being supervised by a Deputy Surveyor. A Sub-Assistant Director supervises the theodolite survey section consisting of one head surveyor, six deputy surveyors for theodolite survey, and ten field surveyors for demarcation.

The Party office is supervised by the fourth Sub-Assistant, generally the most senior. He is directly responsible for the correctness of the mapping.

MAINTENANCE OF SURVEYS.

22. The question of maintenance of boundary marks and survey records has engaged the attention of the authorities ever since 1864, but it was not until 1893 that any practical steps were taken in that direction. In the latter year, survey schools were opened in order to train karnams in the duties of maintenance, and by the beginning of 1895, all the karnams in the Presidency had been put through a course of instruction in survey. Soon afterwards, the Presidency was divided into six survey divisions, each comprising three or four districts. A Survey Officer was appointed to each survey division and a district surveyor to each district. To

keep up the karnam's knowledge of survey work, annual schools, lasting for 10 or 15 days, were held in each taluk, under the supervision of Survey and Revenue Divisional Officers. The last schools were held at the end of 1899. The results of these schools showed that the survey qualifications of more than 50 per cent of the karnams were either "indifferent" or "bad". Moreover, the arrears under the items of measurement of sub-divisions and replacing missing stones, which had been accumulating for many years, were too heavy to be cleared off by karnams. Field measurement books plotted scale had been prepared by the Karnams, for a large number of villages, but the books were far from complete and required to be carefully checked before they could be accepted as correct. The original arrangements for maintenance having thus proved ineffectual, the survey divisions were abolished from April 1900. Towards the end of 1903 a special department was created to look after maintenance; it was essentially a supervising staff, there being for this purpose a Land Records Inspector in each taluk, a Land Records Tahsildar in each district, an Assistant Director of Land Records in charge of each of the five groups of districts into which the Presidency was divided, and a Director of Land Records for the general administration of the department. This Land Records Department was abolished in 1921 and the staff absorbed into the Revenue Department, but a Deputy Surveyor and a Draftsman remain attached to the Collector's Office in each district. Details of the lines on which maintenance is to be carried on in the future are still under the consideration of Government.

LAW.

23. The legal provisions under which the survey work of this Presidency was conducted up to 1897, were those contained in Act XXVIII of 1860, "An Act for the establishment and maintenance of boundary marks and for facilitating the settlement of boundary disputes in the Presidency of Fort St. George". Under this Act, Government bore the cost of all survey station stones which were not boundary marks and of all boundary marks in unoccupied ryotwari lands, and the owners bore the cost of the survey marks which defined the boundaries of occupied fields. For the better maintenance of boundaries after the completion of survey and for the recovery, from the ryots concerned, of the cost of restoring survey marks, Act II of 1884 was promulgated. This Act made the owner or

occupier responsible for the maintenance of boundary marks of his estate and enabled the Collector to enforce the maintenance of demarcation the generally and to recover, where necessary, the expense incurred in the repair of boundary marks from owner or occupier of land. The two Acts were repealed by the Madras Survey and Boundaries Act IV of 1897. "An Act to amend the law relating to survey of lands and settlement of boundary disputes". While embodying in effect the provisions of the two previous Acts, this Act enabled the Government to undertake the survey of private estates on the application and at the expense of the proprietors. It also empowered the Collector to enforce the maintenance of survey marks in estates under conditions similar to those prescribed for Government villages. Chapter IV provided for the settlement of the boundary disputes, arising otherwise than in the course of a survey, by the Collector himself or by one of his subordinates specially empowered as a Survey Officer specially appointed for the purpose.

Act IV of 1897 was repealed early in 1923 and a new Act passed consolidating and amending the law relating to survey of lands and to settlement of boundary disputes. The most important amendment provides that the record of the survey shall be conclusive proof that the boundaries determined and recorded have been correctly determined and recorded unless the survey had been modified by a decree of a Civil Court within three years of the notification of its completion.

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THE
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VOLUME I

CHAPTER I.

INITIAL CADASTRAL SURVEY.

PRELIMINARIES.

1. Cadastral survey is a survey in which the boundaries, area, reputed ownership and position of each holding or revenue unit are determined. A survey of this kind made for the first time is called Initial Cadastral Survey.

2. Before a survey can be undertaken it should be sanctioned by Government or by the Board of Revenue under the powers delegated to it by the Madras Survey and Boundaries Act, 1923, and a notification published in the *Fort St. George Gazette* under section 5 of the Madras Survey and Boundaries Act, 1923, if the survey is of Government lands, or under section 17 of the Act if the survey is of proprietary estates or other private lands. The survey should be made under the provisions of the said Act and under the rules issued thereunder.

3. When a survey has been ordered the Survey Officer concerned will publish in two successive issues of the District Gazette a notification in Form No. 1 under section 6 of the Act.

4. A sub-assistant or head surveyor will then be deputed to collect information as to the extent and nature of the lands to be surveyed. He should be provided with a map of the area on a convenient scale enlarged from the atlas sheet, and should prepare with its help a preliminary sketch of the country for survey on the scales approximately of 1″=1 mile. This sketch will be called the eye-sketch, and will show the names of all villages, and approximately their boundaries, also railways, roads and rivers, important tanks and hills, stone quarries and other notable features. The villages will be numbered consecutively, commencing at the north-west corner of the sketch.

After being redrawn in the Party Office and passed by the officer in charge, the sketch will be sent to the Central Survey Office to be printed.

5. [*Deleted.*]

6. The stones used for making boundaries should be granite or other durable stone if granite is not available.

7. The dimensions of the different kinds of stones required and the marks which should be cut on each are given below :—

Class I.—Theodolite stations, size 3′ × 9″ × 9″, used on village or khandam boundaries.

Marks—Board arrow on the side and a plummet hole, 1″ in depth on the top, with in addition a triangle surrounding the plummet hole for village tri-junction stations, or with two parallel lines, one on each side of the hole, for other village boundary stations.

Class II.—Field stones, size 2′ × 6″ × 6″.

Marks—Board arrow on the side, also a St. George's cross when planted at bends on village boundaries.

Note.—1. When a stone is required for the demarcation of a subdivision of a class II stone is used with the letter S on the top.

Note.—2. In estates, the letter E, Z. or any other distinguishing mark, as may be dicided on in consultation with the proprietor may be cut instead of the broad arrow.

8. The office in charge should publish a notification in the gazette of the district inviting tenders for the supply of stones to be delivered in each village. The notification should give the description of the different kinds of stones and the estimated number of each kind required. At least one month *time* from the date of publication of the notification should be allowed for the submission of tenders.

Note.—In cases where the area ordered for survey is small and the cost of stones required does not exceed Rs. 500, the Director of Survey may dispense with the required formalities of calling for tender, subject to ratification by the Board.

9. When a tender has been accepted, an agreement should be entered into between the contractor and the officer in charge as far as possible in the terms of Form No. 2. A very careful estimate should be prepared showing the number of stones required villagewar. It is advisable to order at first but three-fourths of the estimated number.

10. As soon as the contractor reports that stones are ready, a subordinate, ordinarily not below the rank of head surveyor, should be sent to pass them at the depots or at the quarries in case the latter are themselves the depots. He should see—

(1) that the stones are of proper size and of approval quality ;

(2) that all theodolite station stones have a plummet hole ; drilled in the centre of the upper surface, one inch deep and three-quarters of an inch in diameter ;

(3) that the broad arrow on the side and the distinguishing marks on the upper surface are cut not less than one-quarter of an inch deep and four inches long ;

(4) that all stones are roughly squared to one-third of their length from the top.

11. No stone should be accepted of which any one dimension is shorter than the size ordered by more than one inch.

12. Passed stones should be marked with tar or paint on the broad arrow to distinguish them from unpassed stones.

13. The officer passing the stones will prepare pass lists in duplicate, in Form No. 3, showing the number of the different kinds of stones passed. He will hand over the original pass list to the contractor and send the duplicate to the headquarter office on the same day.

14. Pass lists should be numbered consecutively for each depot.

15. Pass lists must not contain any corrections. If a correction is necessary, the original must be destroyed and a fresh pass list prepared. The number of stones passed must be entered in words as well as in figures.

16. The stones passed will be left in the custody of the contractor, and his signature or that of his agent taken on the back of the both pass lists. He should keep a depot account in Form No. 5 and submit a copy to the Party Officer every month.

17. As soon as stones have been passed, the contractor will begin to send them to the villages where they will be placed in charge of the village munsifs whose receipts will be obtained. These receipts will be the vouchers on which payment will be made to the contractor in the Party Office.

18. The village munsif should maintain an account of receipt and expenditure of stones and should not issue stones to surveyors except in return for their signed indents (Form No. 4).

19. The surveyor should keep an account of stones received and expended in Form No. 6. This should be submitted with the records of the khandam.

CHAPTER II.

BOUNDARY DEMARCATION.

1. When a sufficient number of stones has been stocked in villages, the fixing of theodolite stations on village and khandam boundaries should be commenced.

2. Before beginning work each surveyor will be furnished with a credential in Form No. 8.

3. He should give a written notice in Form No. 9 to the village authorities on both sides of a boundary about to be demarcated.

4. For Government villages, the karnam and the village munsif and the chief landholders are the representatives; for estates villages, the proprietors must be written to and requested to attend in person or by duly authorized agent.

5. When the lands near the boundary are cultivated, notice should also be sent to the holders of such lands in Form No. 10.

6. The notice should be served through the village servants who will obtain therein the signatures of the parties concerned.

7. When parties, whose attendance is essential, refuse or fail to attend, a report of non-attendance should be sent to the Sub-Assistant in charge, who will take steps to secure the attendance of the parties by having recourse to the Act, if necessary.

8. Before demarcating a district boundary, the officer in-charge of the Survey Party will inform the Collectors of both districts and ask them to appoint some revenue officials to assist and give information in case of dispute. Before demarcating a taluk boundary, the Tahsildars of both taluks must in like manner be written to.

9. Taking with him the village authorities and other persons whose presence may be necessary, the surveyor will commence at the junction of three or more villages and fix theodolite stations at convenient distances apart on the village boundary. All points of junction of three or more villages must be marked by theodolite stations. The stations should be planted, if possible, on field tri-junctions, and with a view to their being utilized later as starting points for khandam lines.

10. Each station must be as far as possible from the next one but must be clearly visible from it. The further the stations are apart, the less will be the effect produced by bad centering of the theodolite or flag over the plummet holes on the stations. It may sometimes be advisable to fix what is called an interpolated station between two theodolite stations to avoid heavy line clearing. This should be a second class stone, on which a plummet hole should be cut, and should be, if possible, on the village boundary and always on a field boundary.

11. A straight line drawn from one station to the next must in no place be more distant than 10 chains from the true boundary.

12. Every stone must be firmly imbedded. Not more than one-third of its length should be visible above the ground. The pit to receive the stone should be made slightly larger than the stone and a small quantity of earth put in at a time and well tamped.

13. There should be sufficient level space round each station stone to allow of the theodolite being set up.

14. Where a rock other than laterite is found conveniently situated, it should be utilized as a station, the broad arrow and the distinguishing mark being cut on it, as also a circle round the latter.

15. When a portion of a boundary of a village, which is being demarcated, touches a Foreign Province or State and such boundary has been already demarcated according to the survey rules of that Province or State and accepted as correct by the Local Government the marks already erected should be accepted and utilized for the new survey. If necessary, additional stones can be placed between such marks, but the new stones must be on the true boundary.

16. When a river forms the village boundary, khandam station stones should be erected on each bank, and the middle of the river bed will be considered the true boundary, provided, however, that existing rights are not interfered with.

17. When defined rights exist within the river bed, they must be recorded and the occupation shown on the boundary demarcation sketch to be prepared by the surveyor under rule 23 below.

18. When a reserved forest adjoins the village boundary, the boundary should be demarcated excluding the forest, except in the case of forests of class III. These forests are selected for management by village panchayats or in the alternative, for disaforestation, and should be included within the village limits. Khandam station stones should be used. If, however, the village happens to be an inam village, stones with village boundary station marks should be used. The stones should be fixed close to the cairns or other marks put up by the Forest department. But the number of such stones should be reduced by cutting, with the consent of the Forest department, the broad arrow and plummet hole on the forest boundary pillars were such exist and can be utilized as theodolite stations.

19. Where the forest cairns or pillars are not placed on the outer edge of the cleared line as required by the Forest demarcation rules, the survey stones should be planted on the other edge only and not close to the forest marks.

20. On completion of demarcation of the village boundary, the village should be divided in to khandams of from 100 to 200 acres. In open country the larger size should suffice.

21. Khandam boundaries should be chosen so as to avoid line clearing, but must follow existing and natural boundaries.

22. The khandam boundaries should present as few irregularities as possible. They should be from 30 to 40 chains apart and should commence and close on village boundary or other khandam boundary stations.

23. A sketch should be prepared in duplicate showing the stones fixed on the village and khandam boundaries. Each stone should be numbered, a different series being given for those on village and for those on khandam boundaries. Lines on which coolies have been employed to clear growth should be marked with red crosses.

Stones on village boundaries not fixed by the surveyor who prepares the sketch should be shown in red ink. The symbols to be used are △ village tri-junctions, □ village boundary station, O khandam boundary station ; ☘ rock mark station.

24. The khandams should be numbered consecutively beginning at the north-west corner of the village. On the upper part of the sketch should be written the number and name of the village, of the villages adjoining, and the names of any reserved forests that may touch the village boundary.

25. The surveyor will sign the sketch in the lower right-hand corner and enter the dates of commencement and completion of demarcation. An abstract of the number of each kind of stone fixed should also be shown.

26. The sub-section officer should inspect 50 per cent of the theodolite stones fixed in each village and the section officer 10 per cent . Special attention should be paid to lines marked with red crosses (rule 23 above), and the amounts claimed in coolie bills should be checked and passed for what the inspector considers is the cost of the work done.

27. Detailed instructions regarding inspection of boundary demarcation are given in Chapter XII. Inspection of field work.

CHAPTER III.

TRAVERSE SURVEY.

1. If the tract ordered for survey allows of it, the area should be divided into two or more portions called main circuits, each containing 100 to 150 square miles and running along village boundaries.

2. The main circuit boundaries should be marked on the eye-sketch referred to in rule 4, Chapter I.

3. As soon as the demarcation of the villages comprised in a main circuit or of those adjoining the main circuit boundary has been completed, a head surveyor or an experienced and capable theodolite surveyor, should be deputed to make a traverse survey of the main circuit.

4. The main circuit surveyors should be furnished with sketches showing the stations planted.

5. Each will be given a transit theodolite, two Gunter's chains, one 100 feet chain, a steel tape, a Salter's spring balance, and a number of blank field books.

6. The handles of one of the 100 link chains should be painted red, and it should be used only as a standard for daily comparison with the other being tested now and again with the steel tape.

7. Angles should be read by repetition using a different zero for each series, and continuing until agreement is secured within the definition to which the vernier is graduated to read.

8. After the angles have been taken at a station, the distance between it and the next station should be measured twice, once with 100 links, and once with the 100 feet chain. The results should be compared, and the line rechained, if there is a difference of more than 1 per thousand.

9. All entries in the main circuit field book must be in ink. They may be recorded in pencil while in field, but if so, the entries in ink should not be written over the pencil figures but apart from them. If a correction is made, the original entry must be scored through, not erased, and should be distinctly visible. The correct entry should be complete in itself; thus, if one of three figures needs correction, the three correct figures should be entered, not one only.

10. The main circuit surveyor should observe the angles to khandam stations adjoining the village boundary, but he need not measure the lines to these. The survey of the khandams will be done by another surveyor.

11. The nature of the ground, whether level or uneven, should be noted in the field book, and the names and taluk numbers of villages on each side the main circuit boundary should be centered.

12. If the distance between two stations cannot be chained, it must be triangulated from two separate bases, and the bases must be chained twice. Alternatively it may be measured by using the subtense bar.

13. The main circuit traverse should be connected with as many principal or secondary Great Trigonometrical and Madras Survey Trigonometrical stations as practicable. A descriptive list of the Trigonometrical stations to be connected will be furnished to the main circuit surveyor.

14. The connection should be made by triangulation from two adjoining base lines and the observations recorded in Form No. 12. The triangles should contain no angle less than 30° or more than 120°.

15. If such triangles cannot be obtained close to the main circuit boundary, a series of minor triangles or a traverse may be necessary to connect the main circuit with the Trigonometrical station. There should be a separate sketch for each connection and the sketches should either be drawn in the main circuit field book or attached to it.

16. The true azimuth of the common side of the two triangles of the first distance connecting the Trigonometrical station must be observed and the observations recorded in Form No. 13.

17. Azimuths must also be observed at intervals of 40 or 50 stations throughout the main circuit boundaries. Village tri-junctions should, as a rule, be selected for this purpose.

18. Observations for azimuth should be taken by a senior head surveyor or by the Sub-Assistant in charge of the traverse section.

19. Village boundaries should be surveyed by theodolite surveyors in the same way as the main circuit boundary. On khandam boundaries no rechaining nor observation for azimuth is needed.

20. The surveyor will traverse the boundary on the side of villages bearing higher taluk numbers than the one in which he is working. Thus in village No. 20, which is surrounded by villages Nos. 18, 19, 21 and 24, he will survey the boundary on the sides of villages Nos. 21 and 24, not on the sides of villages Nos. 18 and 19.

21. High and low water levels should be surveyed at the survey of maritime villages. Surveyors should be in a position to fix the high water level with accuracy by personal observation at new moon or full moon. It should be noted that low water levels should be indicated by dotted lines but *in black* ink.

22. The boundaries of these villages along the coast will follow the ayakut, subject to such modification as may be necessitated by reason of encroachment or recession of the sea.

23. The high tide line should be offsetted in the same way as any other village boundary, the points being marked by pegs, but not demarcated with stones.

24. The line of low tide, that is, the line the tide reaches about six days before full or new moon, should also be surveyed, but not demarcated, and should be shown in the village map by dotted lines. It will, of course, run outside the high tide line, which should also be shown by dotted lines.

25. The work should be done by the A. B. section officer or by a head surveyor. The high tide line should be surveyed the morning after it is marked and the same head surveyor or A. B. section officer should go again to the village five days before new moon to mark and survey the low tide line. Separate offset field books for high and low tide levels should be submitted for each martime village.

26. In tracts under survey all Great Trigonometrical stations, principal and secondary, should be inspected, and the condition of each reported on in the prescribed form. No attempt should, however, be made to repair any ; nor need intersected points, such as pagodas, mosques, etc., be inspected and reported on unless there should be something special about their condition, e.g., disappearance thereof by demolition, etc.

CHAPTER IV.

TRAVERSE COMPUTATION.

1. The traverse computation of main circuits and of the village circuits adjoining should precede that of the other circuits.

2. As soon as the field books of a main circuit are received in the headquarter office, they will be numbered and entered in a register in Form No. 14.

3. The field books will be examined by the head computor who will see that the deduced angles agree within the limit of the minimum graduation of the theodolite used.

4. Triangulated distances must be worked out by a computer and examined by the head computor; and the computed distances should be entered in the field book in red ink and attested by the head computor's initials.

5. The head computor will note the result of his examination in the register mentioned in rule 2 above, and submit the same to the officer in charge for orders.

6. The true bearings of traverse lines for which azimuths have been observed will be computed in Form Nos. 15–16, by two different computors and the computations examined by the head computor.

7. The true bearings should then be reduced by application of correction for convergency with reference to the selected district or other origin. To do this, scale off any available map the Latitude and Longitude of the azimuth station, and by column (4) of the subjoined table reckon its departure from the starting Great Trigonometrical station; to this, add the departure, from origin, of the Great Trigonometrical station. The result will be the departure from origin of the azimuth station with reference to which correction for convergency should be applied in accordance with the said table. The correction is additive or substractive according as the station is west or east of the origin.

Latitude.	Convergency on 1,000 chains.	Difference.	Value of 1″ of arc.
Degrees.	Minutes.	Minutes.	Feet.
(1)	(2)	(3)	(4)
8	1·526	..	100
9	1·720	0·194	100
10	1·914	0·194	100
11	2·100	0·196	100
12	2·308	0·198	99
13	2·507	0·199	99

Latitude.	Convergency 1,000 chains.	Difference.	Value of 1″ of arc.
Degrees.	Minutes.	Minutes.	Feet.
(1)	(2)	(3)	(4)
14	2·707	0·200	98
15	2·909	0·202	98
16	3·113	0·204	98
17	3·319	0·206	97
18	3·528	0·209	97
19	3·738	0·210	96
20	3·952	0·214	95
21	4·168	0·216	95
22	4·386	0·218	94
23	4·608	0·222	93
24	4·834	0·226	93
25	5·063	0·229	92

8. The traverse angles and distances from the main circuit field book will be copied into rough traverse sheets, Form No. 17, in which the reduced bearings will be entered in red ink.

9. The bearings of all the traverse lines will then be worked, and if the angular error between any two bearings be greater than 1 minute in 5 angles, the incorrect work will be sent out for examination.

10. The double measurements for each line will also be compared and all discrepancies greater than 1 link in a thousand brought to the notice of the officer-in-charge. If the rules for the guidance of the main circuit surveyor are attended to, such discrepancies will not be found. If any are found, the main circuit surveyor will be severely punished.

11. If the two distances agree within the above limit of error, the long chain measurements should be taken for the traverse.

12. When discrepancies in angles and distances have been adjusted, the computation of the main circuit traverse will commence on fair traverse sheets, Form No. 18.

13. The main circuit is divided into portions. Each portion starts from a Trigonometrical station and closes on another Trigonometrical station. The angles and distances for each portion will be entered in the traverse sheets, as also the names, latitudes and longitudes of the Trigonometrical stations.

14. Latitudes and longitudes of "modern series" Great Trigonometrical stations can be copied from the synoptical volumes published by the Survey of India, with a *minus* correction of 2′ 27″ in longitude, and those of the Madras Survey Trigonometrical stations, which are based on Preliminary chart values from the

charts or registers in the Central Survey Office, Madras, after application of the following corrections :—

1. A *minus* correction of 2″·5 in latitude and
2. A *minus* correction of 2′ 27″ ·93 in longitude.

The latitudes and longitudes of Lambton's Great Trigonometrical stations require correction to reduce them to modern series values. The corrections to be applied to Lambton's values have been ascertained for each district, and they are shown in Appendix No. III.

15. The rectangular co-ordinates (latitude and departure) from the selected district or other origin of all the Great Trigonometrical stations concerned will then be computed in Form No. 19, from Tables XXVI to XXVIII of the Auxiliary Tables of the Survey of India, Fourth Edition, 1906. In the traverse sheets of the main circuit must be entered the difference between the two sets of co-ordinates of the pair of Great Trigonometrical stations concerned.

16. The deduced bearings of traverse stations will be worked from one bearing to another, the necessary small corrections being applied to close the angular work.

17. The latitude and departure of each station will be taken from the traverse table and entered on a sheet of paper which should be kept in the custody of the head computor, while they are retaken by another man who enters them in the traverse sheets. The two computations will then be compared. If they do not agree, a third computation and, if necessary, a fourth computation, will be made and so on, until any two computations agree.

18. When the head computer has satisfied himself that there is no error in the calculations, the latitudes and departures will be added up from one Trigonometrical station to another, and each portion of the traverse formed into a complete circuit by adding the co-ordinates between the two Great Trigonometrical stations concerned ascertained as per paragraph 15.

19. If the difference between the northings and southings and between the eastings and westings does not in either case exceed 1 in 1,000 links, the traverse may be accepted as correct. If it be more, there must be error either in the measurements, or in the computations or in the identity of the Trigonometrical stations connected, and immediate steps should be taken to detect and rectify the error. Before sending out work for correction, the village circuits adjoining the main circuit should be set up to assist in locating the error.

20. The traverse sheets of all main circuits will be signed by the Officer-in charge of the Survey Party and forwarded to the Central Survey Office for examination, as soon after they have been closed as possible, together with the traverse field books, sketches of connection of Trigonometrical stations and all other records connected with the computation of the main circuit.

Corrections in main circuit traverses, once approved by the Director of errors subsequently located therein at village traverse computations should on no account be effected without his special approval.

21. The purpose of main circuit traverses which have no apparent connection with the work in hand is not difficult to conceive. Balancing the co-ordinates of a closed circuit is not sufficient by itself to determine its accuracy as the co-ordinates would agree, even had an inaccurate chain been used, provided the chain was uniformly inaccurate and no mistake had been made in reading it. A combination with other points fixed independently is therefore needed, and this is secured by connecting the main circuit with Great Trigonometrical stations and by dividing and setting it up into as many lines as there are. Great Trigonometrical connections, each line starting from and closing on a Great Trigonometrical station. The Great Trigonometrical co-ordinates are fixed and the Revenue Survey co-ordinates should accord with them, differences of less than 1 per 1,000 being allowed as negligible. Thus, while the accuracy of angular work is proved by azimuth observations, that of measurement is ensured by connection with Great Trigonometrical stations.

22. The registry of village and khandam circuit field books and their examination by a computor should be done in the same manner as for the main circuit field books.

23. The traverses of village circuits will next be set up, the angles, bearings and distances common to them and to the main circuits being first copied into the traverse sheets.

24. The traverses of khandam circuits will then be set up in Form No. 20. The village boundary lines need not be copied in the khandam circuit traverse, nor those of adjoining khandams already set up, but remarks will be made at the foot of the traverse, showing the lines added to form the khandam into a complete circuit, thus: " Add village boundary from distance 1,083 to 842 "; " Add second khandam from distance 750 to 845."

25. The setting up will be examined and, if the error does not exceed 1 minute in 5 angles in village circuits and 1 minute in 2 angles in khandam circuits, the angles will be closed by applying the required corrections.

26. When applying corrections, care must be taken that, in each case the corrections tend to close the adjoining traverses.

27. The bearings will then be worked and the traverse submitted to the officer-in-charge for initials.

28. The latitudes and departures of the distances common to the main circuits will be copied into the village traverse sheets, and the same calculated for the remaining stations in the manner described in rule 17 above.

29. When the workings have been compared and the head computor has satisfied himself that there is no error in the computations, he will have the work added up and submit the traverse to the Officer-in-charge with the amount of error noted at the foot.

30. In village circuits, the maximum error allowed is 1 link per 1,000 and in khandam and minor circuit, 2 links per 1,000.

31. The distance of a village circuit should not be worked until the angular work of all its khandams has been proved.

32. It may occasionally be found inconvenient to carry out the above rule strictly. In cases where there can be no doubt that an error exists in a line common to two villages or khandams, the remaining portion of the traverse may be worked while the incorrect lines is sent out for correction.

33. An examination of the traverse of adjoining villages and khandams will be of use in discovering where the error in a village circuit may lie. It will be a rule, therefore, that, before sending any traverse work for correction, the adjoining and included circuits must be set up and proved.

34. Faulty work must be shown in Form No. 21 and submitted to the Officer-in-charge for orders, or to the additional Officer or Manager in case the Officer-in-charge is in camp and must not be sent out for correction until orders have been obtained.

35. An error in distance may often be discovered by a careful examination of the field books.

36. When the angles are wrong, an extract from the field book showing only the distances will be sent to the surveyor, and if the distance do not close, the angles only will be given. In both cases the surveyor who corrects the work will retake angles and remeasure the distances.

37. Correction field books will be bound up with the original field books, and reference to their number and date made in the traverse sheets and in the original field book by the computor who makes the corrections in them.

38. When the distances close within the allowed error, the necessary small corrections will be applied to the latitudes and departures, care being taken that, in each case the corrections tend to close the adjoining traverses.

39. The corrected latitudes and departures will be entered in the traverse sheets, and plotting lines worked from the first station of the village traverse.

40. The traverse area will then be computed and the traverses initialled by the Officer-in-charge. They will then be handed over to the head draftsman for plotting.

41. Traverse area computation may, if necessary, be deferred until the traverse plotting has been completed.

42. The computors will sign their names at the back of the traverse sheet in the space provided for the purpose.

CHAPTER V.

TRAVERSE PLOTTING.

1. Village maps are plotted to the scale of 16″=1 mile or 5 chains = 1 inch. In the case of villages, however, whose area exceeds 15 square miles the village map may be on 8″ scale.

2. The plotting is done on sheets of drawing double elephant paper, 130 lb., size of whole sheet, 40 inches by 27 inches; size of half sheet, 27 by 20 inches.

3. The section or rectangle within a whole sheet will measure 32 inches by 24 inches and within a half sheet, 24 by 16 inches.

4. The number of sheets required is ascertained from the column of plotting lines in the village boundary traverse. The greatest northing *plus* the greatest southing and the greatest easting *plus* the greatest westing will give the height and base of a rectangular parallelogram that will exactly contain the polygon formed by the traverse. The number of sheets will be known by dividing the base expressed in inches by 32 and the height by 24.

5. If in dividing the base, the quotient contains a fraction not exceeding half, a half sheet, base 16 inches and height 24 inches, may be used instead of a full sheet.

6. In arranging sheets to contain a village, the shifting must be by half sheets east and west and by whole sheets north and south.

7. Squared sheets will be supplied from the Central Survey Office. The squaring should be tested before the sheets are used.

8. A full sheet will contain 12 squares, four east and west and three north and south. A half sheet will contain six squares, two east and west and three north and south.

9. The position of the first station in the traverse has then to be fixed. This is done in the following manner :—

A diagram, 12 inches square, should be drawn on a paste board, on scale, 1 inch = 40 chains. The diagram should be divided into 12 rectangles, four from north to south and three from east to west. Each rectangle should be divided into 12 one-inch squares. The sides of the rectangles should be drawn in black ink and those of the squares in blue ink. In the diagram which represents 12 full sheets, the sheet margins are supposed to be cut off and the rectangles placed in contact. The rectangles should be numbered from west to east by Roman numerals and similarly the squares within each rectangle by Arabic numerals—*vide* Appendix No. IV. A plot of the rectangular parallelogram mentioned in rule 4 above should be made on tissue paper and so placed over the diagram that the opposite sides of the parallelogram may be equidistant from the adjoining sheet lines in the diagram. The greatest easting and the greatest

northing laid off from the east and north sides of the parallelogram respectively and at right angles to the sides will, where they intersect indicate where exactly, in the diagram of rectangles and squares, station A of the traverse will fall.

10. Whenever station A of the traverse placed in the most advantageous manner with reference to the number of sheets to be used falls within a short distance of an intersection of the 40-chain squares, it should be shifted to the intersection to facilitate plotting.

11. If shifting to an intersection would entail marked disadvantages, such as bringing small corners of the village into separate sheets and causing waste of paper, then the paper can be re-squared from station A as it falls in the rectangle of $2 \times 1\frac{1}{2}$ miles.

12. The traverse will then be plotted from the meridian passing through the first station.

13. The distance on the meridian will be laid off above or below the first station according as the distance is north or south.

14. At each mark on the meridian line, another line will be drawn at right angles, and the distance on the perpendicular taken from the traverse set off to the right or left according as the entries corresponding to meridian distances are east or west.

15. The points thus successively fixed on the lines perpendicular to the meridian are the stations or angles of the polygon. As each station is plotted, the distance between it and the last will be tested.

16. If there should be more than one sheet for a village, a key showing the arrangement of the sheets and their numbers should be drawn in the margin of each sheet. The rectangle denoting the sheet should be distinguished by hachure lines.

CHAPTER VI.

FIELD DEMARCATION.

Note.—The term "poramboke", wherever it occurs in this volume, means land which is reserved for State or communal purposes such as :—

1. River and stream.
2. Tanks.
3. Tank-beds.
4. Channel.
5. Banks.
6. Pond.
7. Ditch.
8. Fort.
9. Well.
10. Topes.
11. Railroads.
12. Burning and burial grounds.
13. Cattle-stands.
14. Grazing grounds.
15. Village-site.
16. Forest.
17. Pagoda.
18. Threshing floor.
19. Salt pans.
20. Public buildings.
21. Cart-tracks.

1. Field demarcation and survey will begin after a sufficient number of stones have been stocked in the village.

2. The work will be done by field surveyors under the supervision of deputy surveyors, head surveyors and sub-assistants. A batch of nine field surveyors will form a deputy surveyor's range, and four such ranges will form a head surveyor's sub-section. Two such sub-sections will form a sub-assistants section.

3. As soon as the field surveyor arrives in the village, he should ascertain by personal enquiry whether any of the landholders are willing to supply their own stones and labour and then send to the range deputy surveyor a special report regarding this and the state of stone supply in the village, etc. The deputy surveyor should go to the village if any difficulties have been reported, do his best to over come them and write to his sub-section officer only in case of failure.

4. The field surveyor should give a written notice in Form No. 9 to the village authorities requiring their attendance during demarcation. He should ascertain the names of the owners or occupiers of the lands he has to demarcate the next day and serve on them, through the village servants, written notices in Form No. 10.

5. When parties, whose attendance is essential, refuse or fail to attend, a report of non-attendance should be sent to the section officer who will take steps to secure the attendance of the parties by having recourse to the Act, if necessary. It is of no use whatever reporting persons for non-attendance unless it can be shown clearly that they received the notice in due time, that their attendance was necessary and that they were absent without good and sufficient cause.

6. The field surveyor should be accompanied by the karnam, the village munsif and the owners of the properties he is demarcating ; but if, for any sufficient reason, the village authorities should be absent from their village, as on jamabandi or other work, the surveyor must not be idle. He must go on marking the fields according to possession, guided by the latest revenue accounts.

7. The field surveyor will be furnished with the boundary demarcation sketch of the village. He should demarcate the fields commencing with the first khandam of the village and be guided by the following rules.

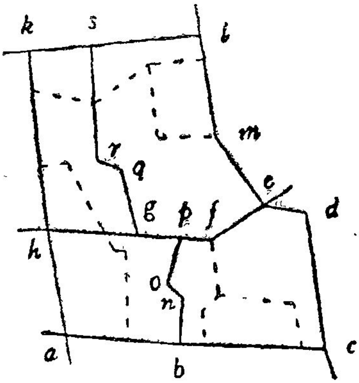
8. A revenue field, i.e., field registered in the revenue accounts may be either occupied or unoccupied. If occupied, it is a distinct piece of land of one description of soil and held on one tenure by one man or jointly by more. If unoccupied, it is either poramboke, or waste assessed or unassessed. Occupied revenue fields always form distinct items in a patta. A paimash field may be a revenue field or it may contain two or more revenue fields.

9. Subject to rules 10, 11, 12 and 18 below, revenue fields should be clubbed to form survey fields up to a maximum of 5 acres in wet land and 10 acres in dry land. In a survey field so formed, each revenue field will form a separate subdivision. If two or more previously existing revenue fields (still separately registered) which are contiguously situated have passed into the enjoyment of a single individual or the enjoyment of a number of persons who hold and enjoy them jointly and in common and are of the same description of soil and tenure they should be formed into a single subdivision of the survey field.

10. No survey field thus formed should contain more than 20 subdivisions unless its area is below 2 acres in wet and 4 acres in dry land, when no limit is placed on the number of subdivisions.

11. In clubbing revenue fields, great care and judgment are required to avoid the boundaries of survey fields being irregular—*vide* diagram below :—

NOTE.—*a b c d e f p g h* and *h g p f e m l s k* are letter formed fields than *a b n o p g q r k h* and *b c d e m l s r q g p o n.*



12. No existing revenue field, however large, is to be subdivided except by special order of the officer-in-charge.

13. In demarcating fields existing limits of occupation should be adhered to and all bends recognized except such as are within 10

links from a line between the marks on each side where the land is valuable or within 20 links in dry land of little value. When such small bends are ignored, care should be taken that the marks at each end of the line are so placed on the boundary that there is no appreciable loss of land or of trees to either party. Bends on subdivision boundaries should not be marked with stones unless the subdivision is a poramboke.

The letter 'S' should be cut on the top of field stones planted at bends on subdivision boundaries and the St. George's cross on those marking bends on village boundaries.

14. When field boundaries are found to be very crooked beyond the limits within which equalization of bends is admissible as provided in rule 13 above, every endeavour must be made to induce landholders to consent to their being straightened; it must be explained that the saving in stones will be very great, and that they can lose nothing, because just as much will be added to each field as is taken away from it.

15. If ryots agree to straighten their boundaries, they must demolish the old and set up the new bunds at once. Unless they do this, the field boundaries will have to be marked as they exist; in no case is any bend beyond the limits laid down in rule 13 above to be ignored, because ryots say they will form the new bunds after the marks have been put up.

16. When there are bunds or hedges between fields, the centre of these will, as a rule be considered to be the boundary unless there is evidence to the contrary.

17. Where the registered holder is absent or where the boundary between two revenue fields is disputed, the line must be laid down according to the village records or as ascertained from the village officers and from such other evidence as may be available.

18. All roads, cart-tracks and channels shown as porambokes in the revenue accounts and those which are included in the ryotwari holdings and which exceed 20 links in width should be demarcated as separate survey fields half a chain or over in width; but the officer-in-charge of the survey party may, at his discretion, survey such a cart-track or channel as a subdivision in order to secure well-shaped survey fields. The former should be surveyed as subdivisions when they are less than 50 links and the latter when over 20 links and less than 50 links in width. Those included in ryotwari holdings which do not exceed 20 links in width and those included in large waste blocks which are not to be surveyed in detail, should not, except in special cases to be determined by the Revenue Officer, be subdivided but marked as details.

When a waste block is surveyed in detail, those roads, cart-tracks and channels in it which do not exceed 20 links in width, need not be subdivided and should be shown as details.

19. Before demarcating the boundaries of Government or Local Fund roads, reserved forests, channels or other public works, notice must be sent by the sub-assistant to the local officers concerned to depute a responsible subordinate to attend with acquisition sketches and point out the boundaries of such lands. The subordinates deputed should certify to the correctness of the demarcation of the land and the certificates should be filed with the records of the village. If there is any difference between the boundaries pointed out by them and by the ryots, the matter must be reported to the officer-in-charge for orders.

20. Encroachments on public lands set apart for burial grounds, market places, topes, village-sites, etc., should be set back and sufficient width reserved for village roads.

21. The boundaries of communal poramboke fields and sub-divisions should be straightened by cutting off sharp projecting bends provided the usefulness of the porambokes is not impaired. Any bit of land so excluded from the poramboke should be marked as a waste subdivision, if the area which will be otherwise added to an adjacent revenue field is more than 5 cents or if it contains valuable trees. If less than 5 cents and containing no valuable trees, it should be surveyed as part of the adjoining revenue field. Such part of the land as may contain valuable trees should be surveyed as an assessed waste subdivision or subdivisions irrespective of area. When however the poramboke adjoins a waste field, the part excluded should be surveyed with the waste field without subdividing it.

22. When no patta can be shown for any apparent encroachment of over 5 cents which on the poramboke side of the straight boundary, fixed as directed in rule 21 above, it should be measured and plotted as an encroachment sketch to be attached to the land register, a remark being entered there against the fields giving the encroacher's name and the area encroached upon. When the encroachment is less than 5 cents, a remark in the land register will suffice.

23. Large waste block fit for cultivation should be divided into 10 acre fields, following where convenient the limits of *sivayijama* cultivation, care being taken to secure regular field boundaries.

24. Where a road runs through Government waste, its limits should be marked at a maximum distance of one chain on each side of the centre line of roadway.

25. Before marking out the boundaries of railway lands, the local railway authorities must be communicated with, asked for copies of land plans and written permission obtained to enter on their premises when necessary.

26. Railway lands in the case of Railways constructed by companies which receive land free of cost are divided into four classes—A, B, C, D—first class A, land which the railway company receives free of charge for permanent occupation ; second class B, land also provided free of cost but only for temporary occupation ; third clas

C, land which the railway company has to provide at its own cost; fourth class D, land which being required in consequence of the works of a railway still does not come directly into the occupation of the railway company at all.

27. Under class A is included all land required for the permanent works of the railway, including the formation of the line with its side slopes, berms, ridges, etc., and for all stations, workshops, permanent store-houses and the like necessary for the line when opened.

28. Under class B is included all land essential for the execution of the permanent works of the railway but not required after the completion of the line in part or whole. Such is land required for spoil banks, for extra excavations to make banks, or for the storage of materials held in stock by the railway company pending the construction of the line or their despatch to the works.

29. Under class C is included all land which is required for the provision or preparation of materials, for purposes contingent on the actual execution of the works on the line or for other miscellaneous objects.

30. Under class D is included all land required outside the company's boundary, for the diversion of roads or rivers and for the construction of roads which are made for public purposes but will not afterwards be maintained by the company.

31. " A " class lands should be surveyed as separate fields. " B " class lands should be surveyed as subdivisions of the fields in which they lie. " C " class lands should be surveyed as new fields or as subdivisions according to their area or importance.

" D " class lands.—New roads and channels if 50 links or more in width, should be surveyed as entire fields, about 10 chains in length. If below 50 links in width, they should be surveyed as subdivisions of the fields in which they lie.

32. In the case of railways constructed by Government or by Companies not entitled under their contracts to land free of cost, land is dividied into two classes, ' permenant ' and ' temporary '. The former corresponds to A class land and should be marked as separate survey fields the latter which comprises land required for temporary occupation only and which will eventually be relinquished, should be marked as subdivisions or as survey fields according to area.

33. Long narrow fields, such as roads, cart-tracks, channels, railways, etc., should be split up into survey fields each measuring about 10 chains in length.

34. Inam fields should, as a rule, be surveyed in accordance with the inam title-deeds or the inam register. Unenfrachised inam fields should not be subdivided except to exclude porambokes; porambokes, channels, cart-tracks and footpaths, registered as subdivisions of an inam field in the revenue accounts and existing on the ground, should be surveyed as subdivisions whether the

width exceeds 20 links or not ; where channels, though registered as subdivisions in the revenue accounts, no longer exist on the ground the question of their separate subdivision should be decided on its merits. Enfranchised inam fields may be subdivided according to enjoyment.

35. Public Works Department channels, Local Fund roads and cart-tracks passing through village-sites should be marked as fields or sub-divisions according as they have been marked outside the village-site.

36. Government lands which are situated in villages included in municipal towns and are assessed to revenue (including ground-rent) or are available for disposal on payment of assessment or ground-rent as also lands in the possession of Government in such villages, should be surveyed if their extent is not less than one cent.

During the survey of estates, the lands in which Government have an interest should ordinarily be surveyed as entire survey fields. Where however such lands are contiguous, they may be clubbed with one another and surveyed as subdivisions of the same field. They should not be clubbed with estate lands and surveyed as subdivisions of estate lands. Before such survey is made, a notification under section 5 of the Madras Survey and Boundaries Act should be published.

37. Cultivation in forest blocks, if recognised as enclosures, should be marked separately according to the existing limits on the ground. If the area of an enclosure thus marked is more than that allowed at the forest settlement, the excess should be formed as a separate subdivision and the same reported to the Collector for such action as he may deem necessary.

38. Stones erected by the Public Works Department on the banks of canals, etc., by the Railway Department to define A class lands, and by the Forest Department to define forest boundaries, should, with the consent of the departments concerned, be utilized as survey marks by cutting the broad arrow on them.

39. From the boundary demarcation sketch of the village supplied to him, the fields surveyor will prepare a skeleton field demarcation sketch for each khandam, on scale 1 inch=5 chains on a quarter sheet of litho double royal paper, 80 lb., size 20 inches by 12½ inches. As he demarcates the boundaries of survey fields and the included subdivisions, he will sketch them in pencil in the skeleton demarcation sketch.

40. As each field is sketched, the surveyor will note in the sketch in pencil the paimash numbers and the number of each registered holding and other particulars necessary for writing up the field or land register.

41. The sketch must be neatly drawn so as to admit of every field and subdivision bend being clearly shown.

42. The pencil lines in the sketch should be inked as soon as the stones have been erected and not before.

43. The symbols to be used in the sketch for the different kinds of stones are—

⊠ Village trijunction.

⊡ Village boundary station.

⊙ Khandam station.

● Forest cairn.

Rock mark.

44. Fields must be numbered consecutivley throughout a village commencing from the north-west corner of the first khandam. The last field in the first khandam must touch the boundary of the second khandam and so on, so that there may be no break in the continuity of the numbers.

45. Subdivisions in each survey field should be numbered consecutively commencing from the north-west corner of the field.

46. At the head of sketch will be entered the name of the taluk, the number and name of the village, the number and area of the khandam and the number of fields, as also the number of stones, those planted during boundary demarcation being distinguished from those planted during field demarcation. The numbers and names of adjoining villages or the numbers of adjacent khandams must also be entered in the sketch.

47. The surveyor should sign the sketch in the lower right hand corner and enter the dates of commencement and completion of the khandam. No more writing is allowed.

48. As demarcation proceeds or immediately on completion of the demarcation of each khandam, the land register should be prepared in Form No. 22, the survey field and subdivision numbers being entered at first in pencil from the fields demarcation sketch.

49. In preparing the land register, the greatest care is necessary in locating the old paimash numbers against the new survey numbers. In doubtful cases, local enquiries should be made.

50. In all case of discrepancy between established occupation and accounts, demarcation must follow occupation; but the property must be registered in accordance with the village accounts, the discrepancy being explained in the register in the column of remarks.

51. All the paimash numbers must be accounted for in the register and entered opposite the survey numbers in which they are included. When portions of a paimash field are included in several

survey fields, the total area of the paimash field should be entered against the first survey field number in which it appears. Against the remaining survey field numbers only the paimash number should be entered, and for its area reference should be made in the last column the register to the first survey field number against which the same was noted.

52. The register must show distinctly for each property the number of the registered holding and the name of the registered holder. In the case of inam fields, if enfranchised, the title-deed numbered and the name of the inamdar should be entered, and if un-enfranchised the name of the institution or service to which each relates.

53. For joint holdings, the names of all the shareholders should be entered against the first survey field number. In all subsequent fields in which the same joint holdings appear, it will be sufficient to note the name of the first shareholder and the number of the other shareholders.

54. The field surveyor will initial every page of the land register and the last page will bear the signatures of the field surveyor, range deputy surveyor, sub-section officer, section officer and village officials.

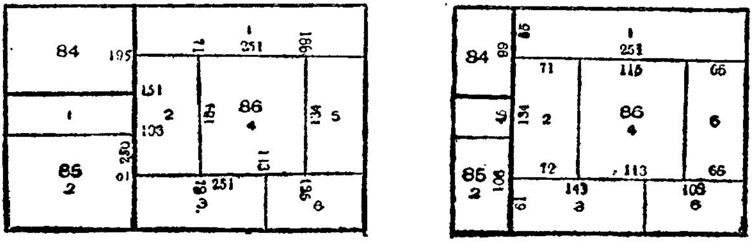
CHAPTER VII.

FIELD MEASUREMENT.

1. The measurement of no survey field should begin until all stones have been fixed on its boundaries.

2. Fields should be measured in the consecutive order of their survey numbers. The distance from stone to stone on the field boundary and from bend to bend on the subdivision boundary should be measured first. In making these measurements, the surveyor should take care to see that the common boundary between two survey fields or two subdivisions is measured but once so that there may be no difference between the measurements recorded for such common boundaries. The diagram below explains how the measurements should be made and recorded :—

How measurements should be made. *How measurements should be recorded.*



3. Each field should then be divided into triangles by chaining lines across from junction to junction of three or more survey fields, and offsets should be taken from the sides of the triangles to all bends on field and subdivision boundaries. The triangles should be so formed that the bends to be offsetted are not more than 5 chains distant from the sides.

4. Where it is not possible to chain lines from one trijunction to another, the triangle should be so formed with reference to other demarcated points on the field boundary that not only can each field be plotted independently, but that a continuous series of triangles may be built up for the whole village so as to facilitate the plotting of the village map.

5. Long narrow fields, which cannot be plotted correctly if measured in triangles, should be measured by running a single line through the field. Small fields overgrown with scrub or prickly-pear or otherwise unsuited for field triangulation should be measured by offsets from lines outside running between two field stones. Large fields of the later class should be left to be surveyed with the theodolite or circumferentor,

6. Enclosures within forest reserves, and other detached fields whether situated within or outside the village boundary, should be connected with one another and with the main work by chain triangulation or by traverses run with the theodolite or Stanley's circumferentor. When enclosures within reserved forests lie at a considerable distance from the village boundary they need not be connected and will be plotted in the margin of the village map with an explanatory note.

7. The position of all important topographical details, such as village-sites, public buildings, channels, streams, tanks, wells, cart-tracks, foot-paths, etc., whether separately marked or not as survey fields or subdivisions, should be fixed by measurements.

Note.—Only those foot-paths which lead from village to village or from one hamlet to another should be regarded as important.

8. Measurements need not, however, be taken to unimportant details or to such as are likely to change. Small gravel pits, shallow water-courses which are usually ploughed over, small rocks, temporary paths or tracks, old unused wells, temporary dams and temporary sluices should be ignored altogether. It is difficult to lay down exact rules on this point. The surveyor must use his discretion bearing in mind that the first object of the survey is to measure and map field boundaries.

9. The relative importance of each topographical feature should be considered ; any feature that attracts special notice on the ground should be measured to ; a single large tree, a small temple or large rock in an open country and a narrow pathway across an otherwise impassable mountain range are important details and should be fixed by measurement.

10. Arrows indicating the direction of streams should be inserted in the field measurement book. Care should be taken that the direction of the arrow shows the direction of the stream correctly.

11. All permanent lines of communication, such as foot-paths, cart-tracks, earthen roads, gravelled roads and metalled roads, should be distinguished from each other by their appropriate symbols—*see* Appendix No. V.

12. At the point where a railway, road or path crosses the village boundary, the place from or to which it leads should be entered with its distance from that point.

13. The name of every village-site, hamlet, tank, hill, river, channel or other topographical feature, which has a distinguishing name, must be entered in the field measurement book, and care must be taken to ensure its correct spelling.

14. When detailing village-sites, the boundaries of blocks of houses on either side of the streets should be offsetted from chain lines measured along the streets. The depths of each block of houses and backyards and prominent bends on the back of them should also be measured and offsetted. Temples and important

public buildings should however be measured separately. When the village-site is too large for measurement by the chain and cross staff, a skeleton traverse plot of it will be supplied to the surveyor on scale 1″=1 chain and on it the blocks of houses should be plotted.

15. As each field is measured, a plan thereof should be plotted by the surveyor in a field measurement book with the triangulation measurements and offsets—vide Appendix No. VI. As a rule the top of the page will represent the north, but when it does not, the north point line should be drawn.

16. The accuracy of the triangulation and offset measurements and of the plotting should be tested by the measurements taken round the field and subdivision boundaries. The boundaries should not be inked until the plotting has been so tested and found correct.

17. The field measurement book should be prepared in duplicate. All topographical details fixed by measurement should be plotted in both copies.

18. The scale on which the fields should generally be plotted will depend on the area, thus—

Up to 5 acres, 1 inch=1 chain.

5 to 20 acres, 1 inch=2 chains.

Over 20 acres, 1 inch=5 chains.

The point to bear in mind is that the scale must be large enough to enable all measurements to be shown distinctly.

19. The fields must be plotted in the field measurement book in the consecutive order of their survey numbers. The scale should be noted at the foot of each field map.

20. Not more than one field should be plotted on each page of the field measurement book, and one field should not occupy more than one page.

21. If a field cannot be plotted on the prescribed scale on a single page, as in the case of long narrow strip of land, such as a channel or pathway measuring less than 5 acres, it may be plotted on a smaller scale, provided all measurements can be clearly shown.

22. Where, however, the field is too large to be plotted on one page on a sufficiently large scale to admit of all measurements being recorded legibly, it should be plotted on sheets of field measurement book form mounted on cloth (allowing about half an inch margin for stitching, to fold to the size of the field measurement book).

23. The area of each survey field and of its subdivisions should be taken by the field surveyor with the area square from the plotted map in the field measurement book and entered in pencil in the column provided for it in the field register and in the duplicate field measurement book,

24. At the foot of each page of the field measurement book the surveyor should sign his name in black ink and enter the date of measurement.

25. As the measurement of fields in the khandam progress the field surveyor should number the stones in ink in the field demarcation sketch. The number of stones planted each month should be written at the foot of the sketch and the totals entered on completion of the khandam. Each stone should be given a number in the sketch and the number of the last stone planted each month should be marked with a red circle.

26. On completion of field survey the surveyor must measure lines from one khandam station to another along the khandam boundaries offsetting field trijunctions on the boundaries. To prevent duplication of work the surveyor who completes khandam No. 1 will measure the sides along the village boundary leaving the rest to be done by the surveyors who measure the side khandams. These measurements should be recorded in the field demarcation sketch.

27. The accuracy of the measurements made by the field surveyor should be tested by all inspecting officers, viz., range deputy surveyors, sub-section officers, section officers and gazetted officers, by means of measurement and check-measurement in accordance with the instructions contained in Chapter XII, Inspection of Field Work.

28. Inspecting officers should sign their names in full in red ink in the original field measurement book at the bottom of the map of each field inspected by them, noting above their signatures the number of lines tested. The field surveyors' measurements should be ticked off in red ink if they agree with the measurements of the inspector within the margin of error allowed in rule 17, Chapter XII. When the difference exceeds that allowed, the inspector's measurements should be entered and attested in red ink in both copies of the field measurement book and the surveyor's measurements scored out.

29. On completion of field inspection, the field register, a fair copy of the demarcation sketch showing only field boundaries, and the duplicate field measurement book, should be sent to the Special Revenue Officer or the Revenue Divisional Officer as may be ordered.

In estate surveys these records should be sent to the proprietors or to their representatives. When the estates is managed by the Court of Wards, the Manager or whoever he may depute will receive the records.

30. On receipt of the records, the Revenue or estate officials will make such inspection, as may be necessary, of the work of the surveyors in field and will satisfy themselves as to the completeness of the work before finally passing the field register and causing it to be used for the correction of the permanent village accounts.

31. The records will be returned after check to the survey section officer with lists and sketches illustrating the additional subdivisions or changes considered necessary. These should be attended to promptly, but any proposals which seem at variance with standing orders, or which require alteration of field boundaries entailing considerable remeasurement, when the object desired can be secured by a subdivision, should be reported to the officer in-charge.

In the case of estate surveys, the records should be returned to the officer in-charge of the party within two months from the date of receipt of the records by the proprietors or their representatives.

32. The officer in-charge should refer such of these changes as he thinks necessary to the Revenue or estate officials and may, if there is still disagreement, refer them to the Director of Survey.

CHAPTER VIII.

PLOTTING VILLAGE MAP.

1. As soon as the original and duplicate field measurement books are received in office and before the plotting of the village map is taken up, they should be compared with each other.

2. The numbers of side fields and all the measurements of lines in the plan of the first field in the original copy of the field measurement book should be compared with the side numbers and measurements of the corresponding lines in other field plans, both originals and duplicates. As each number or measurement is compared, it should be ticked off in pencil so that it may not be compared again. The measurements and numbers not checked should then be compared in all the fields in turn.

3. Discrepancies found on comparison should be noted in Form No. 24.

4. Discrepancies between the original and duplicate field measurement books should be rectified by correcting the duplicate to agree with the original.

5. Where different measurements are recorded for the same line in adjoining fields, and the difference is not more than three links in distances of five chains and under, not more than one link per chain in distances of over five and under ten chains, and not more than ten links in distances of ten chains and over, that measurement should be retained which is nearer the theoretical length of the line as calculated from the recorded diagonal and offset distances and the other measurement corrected.

6. Where the difference, though within the margin allowed, cannot be adjusted with reference to calculated distances, or when no diagonal and offset measurements are available, the measurement recorded for the field bearing the lower number should be retained and that in the field bearing the higher number corrected.

7. Differences within the margin of error allowed will be adjusted by the draughtsman who compares the field measurement books, the measurement adopted being entered in the column provided for the purpose in Form No. 24.

8. Differences above the prescribed limit should be examined with reference to diagonal and offset measurements and reported to the Manager for orders.

9. The Manager's recommendations should be submitted to an officer if there be one in headquarters. If not, the Manager may send sketches to field for remeasurement, submitting his recommendations to the officer in-charge in camp.

10. The plotting of the fields in the village map should begin after the traverse plotting of the boundary and khandam circuits, and the laying out of the points offsetted from the village and khandam boundary and cross purtal lines have been completed. In special cases the officer in-charge may permit field plotting of a portion of a village being proceeded with, while the traverses or purtals not affecting that portion remain unplotted.

11. Fields should be plotted from the measurements in the field measurement book. Subdivisions should not be plotted in the village map.

12. Enclosures within forest reserves and other detached fields situated outside the village boundary should be plotted in their correct relative position wherever possible. When they lie far off the village boundary, they should be plotted in the margin of the map without reference to their correct position and a remark to that effect printed in the map.

13. When the measurements appear to be wrong in any part, the plotting in that part had better not be continued but carried to it from some other direction.

14. With the help given by the points offsetted from purtal lines, and by the several theodolite station points, it should be possible to ascertain exactly in what line an error of measurement lies.

15. Errors will be shown in the map by a cross mark on the line itself and also noted in a discrepancy list in Form No. 25.

16. The erasure of pencil marks injures the surface of the map for Vandyke printing and the pencil should be used only for the field and village numbers and field boundaries which it is desirable to write first in pencil and type or ink afterwards. Topographical details should be drawn or typed direct in ink.

17. A senior draughtsman should test 25 per cent of the plotting in each sheet of the village map. He should also examine the plotting of the fields in which errors have been located by the field plotter.

18. The examiner should check the discrepancy list (rule 15), write the action suggested and submit the list and records to the head draughtsman.

19. After scrutiny, the head draughtsman will submit the list and records to the Manager who will test some of the corrections made certifying so against each and submit the list to the officer in-charge who will order remeasurement to be made where he considers it necessary.

20. On receipt of the correction sketches from field with the remeasured distances entered in them corrections will be applied in the map and in the field measurement book.

21. The field measurement book prepared by the field surveyor will not show the fields traversed as minor circuits with the theodolite. A traverse plot of each of these fields should be prepared from

the surveyor's rough plans and inserted in the field measurement book. The traverse lines where they are not coterminous with the field boundary should be drawn in red ink.

22. When, as provided in rule 16, Chapter II, the middle of a river bed forms the true boundary of the village, the field map for the river portion should be pricked from the village map. The conventional lines denoting the boundary of the river portion should be shown in the field map by broken lines and the measurements for the lines should be obtained by scale from the village map. A note should be entered at the foot of the field map that the broken lines are conventional lines.

23. The village boundary should be compared with the boundaries shown in the maps of the adjoining villages, and correction lists prepared for adjustment of discrepancies, after verifications on the ground, if necessary.

24. Tracings should be taken from the village map for the boundaries of villages of which the maps have yet to be prepared for comparison when those maps are ready.

CHAPTER IX.

FINISHING VILLAGE MAP AND AREA COMPUTATION.

1. The field boundaries should be inked, the village and khandam boundaries being drawn slightly thicker than the field boundaries. The lines should be drawn evenly with a steady hand, and care should be taken to show the bends on field boundaries by well-defined intersections of the lines constituting the boundaries to secure a clear delineation of these latter in the printed maps. The Indian ink used should be of sufficient consistency and not watery.

2. The field numbers should be neatly typed, the figures heading north, as a rule. When necessary, the numbers may be typed transversely, but such instances should be rare. To ensure clearness in the printed maps, the field numbers in the original map must be quite distinct. This can only be secured by keeping the types perfectly clean. They should be thoroughly cleaned with turpentine and a hard brush daily. They should never be wiped with cloth but always with soft leather.

3. If the ordinary types for field numbers would over-crowd the map, smaller types should be used.

4. Where a field is too small or narrow to admit of its number being typed with clearness even by using small types, the number should be typed in the nearest open space and its reference to the field indicated by an arrow.

5. In the case of fields which are divided by the sheet lines and which consequently lie partly in one sheet and partly in another, the field numbers should be typed within the sheet which contains the larger portion of the field. In the other sheet which contains the smaller portion, the field number should be typed outside the sheet line in smaller type. When sheets are joined, only one number must appear in each field.

6. Adequate enlargements of small fields, not roads or channels, less than a quarter of an acre, or narrower than half a chain, should be plotted in the margin of the map.

7. While the inking of field boundaries and the typing of field numbers are in progress, the areas of survey fields and subdivisions should be taken with the area square from the field measurement book and entered in Form No. 26, field measurement book area computation sheet.

8. This will be called the first computation sheet, and it should be handed over to the head computor who will then direct the recomputation of areas by another computor.

9. The recomputed areas will also be entered in Form No. 26 and this will be called the second computation sheet.

10. The first and second computations should be compared by another computor, who will score out neatly in red ink in the second computation sheet all entries which agree within the percentage of difference allowed, viz.—

1 to 25 cents	1 cent.
26 to 50 „	2 cents.
51 to 75 „	3 „
76 to 100 „	4 „
101 to 500 „	5 „
Above 500 or 5 acres	1 per cent.

11. A list of fields not scored out in the second computation sheet should be prepared for third computation which will be performed by a third computor.

12. The first and third computations will be compared and if they agree within the allowed percentage, the third and second computations should be scored out in red ink and the first computation retained.

13. If the first and third computations do not agree and the second and third do, the first computation should be corrected in red ink as per third computation and the second and third computations scored out as before. The same course should be adopted if more than three computations are found necessary.

14. The first computation sheet will then be the rough computation sheet for areas computed from the field measurement book. In this computation sheet, the areas of subdivisions should be totalled for each survey field by the computor who compares the different computations.

15. As soon as the field boundaries have been inked and the field numbers typed, the village map will be handed over to the head computor for area computation.

16. The area of survey fields will be computed with the computing scale and entered in Form No. 26, map area computation sheet.

17. The areas obtained from the field measurement book and village map will be compared.

18. For fields of which the areas agree within the percentage of difference mentioned in rule 10 above, the entries in the map area computation sheet should be scored out in red ink, and from this sheet a list of fields not scored out should be prepared for recomputation.

19. In the case of such of the fields in this list as contain subdivisions, the totals in the rough computation sheet should be examined and fields in which the difference was due to incorrect totalling should be eliminated from the list.

20. The recomputation of the remaining fields should first be made in the village map.

21. If the recomputed area agrees with that in the rough computation sheet, the entries in the map area computation and recomputation sheets should be scored out in red ink. But if it does not agree, the plotting in the field measurement book should be examined, and the area of the field and its subdivisions, if any, should be recomputed with the area square. If difference should still exist, the plotting of the field in the village map should be examined and its area recomputed with the computing scale. The process of recomputation should be continued until the computing scale area taken from the village map agrees with the area, square area, taken from the field measurement book within the percentage of difference allowed.

22. The computing scale area should then be scored out and the field measurement book area as recorded in the rough computation sheet should be adopted as final.

23. From the final rough computation sheet, a rough area list will be copied in Form No. 26, showing the areas of survey fields and subdivisions.

24. After the entries in the rough area list have been carefully compared, the areas of fields should be totalled up.

25. The areas of offsets on the village boundary should be computed with the computing scale and entered in Form No. 27.

26. The area of offsets outside the traverse lines will be added to, and that of offsets inside the traverse lines deducted from the traverse area. The result thus obtained will be the true area of the village.

27. This area should be compared with the total area of the village by fields, and the difference should not exceed 1 per cent.

28. If the difference exceeds 1 per cent, it points to error in the computation of either traverse or field areas or both.

29. The traverse computation should first be examined, and then, if necessary, the field area computations and the difference adjusted.

30. When this has been done, the areas of fields and subdivisions should be copied from the rough area list into the field register, and the abstract at the end of the register filled in. The areas of survey fields will, at the same time, be copied into the field measurement book.

31. A fair area list should be prepared from the rough area list in Form No. 28.

32. The rough and fair area lists, field measurement book and field register will be compared with one another.

33. Important details shown in the field measurement book should be plotted in the village map.

34. The details should be examined to see that channels and roads are continuous and that the names of village-sites, public buildings, rivers, channels, etc., are entered in the map. The details should then be inked.

35. As the light is supposed to fall on the paper from the upper left-hand corner in parallel rays at an angle of 45° to the horizon, all objects in elevation, such as buildings, banks and raised roads, must be shown by thick lines on the right hand and lower sides, or if the top of the drawing represent the north, the outlines east and south should be thickened, while all depressions, such as rivers, tanks and wells should be thickened on the north and west sides.

36. All names and words should be printed so as to suit the map of the village when the sheets are joined together. Part of a name will, under this arrangement, often fall in one sheet and part in another. When this is the case, the continuation of the word or name should be printed in small type on the margin of the sheet in which it commences, and likewise, the beginning of the word or name on the margin of the sheet in which it ends.

37. The map should show where roads and tracks lead. The name of the place is sufficient without adding 'from or to' and care should be taken to print names only where necessary and where omission would leave destination doubtful.

38. The names of adjoining villages should be typed symmetrically across the blank space left on the sheets, but only once in the case of each village. The number of each sheet should be typed close to but outside the sheet line and above the right-hand corner. The number should extend beyond the east sheet line produced.

39. In a line with the sheet number will be typed the number and name of the village of which the sheet is a part. The numbers of the adjoining sheets should be typed outside the sheet lines on each side in the middle of their length. It is not necessary to add the words "adjoining sheet".

40. The heading of the map should show the names of the district and taluk, and the taluk number, name and traverse area of the village. The village name should be in larger type than that used for district and taluk names.

41. The heading should be placed in one of the upper sheets of the map, so that it may occupy a conspicuous position when all the sheets are joined or printed. The north point should be drawn close to the heading.

42. The scale of the map and the proportional linear magnitude, otherwise called the representative fraction, should be typed just below the area; and underneath the area, the scale itself should be drawn. Below the scale should be drawn a square representing one acre on the scale of the map.

43. Appendix No. V is a standard sheet of reference for the guidance of draftsman in inking 16-inch village maps and Appendix No. VII is a table of representative fractions.

44. Each topographical detail is distinguished by a symbol to which a separate number is assigned. No separate table of reference should be drawn on or attached to the village map. It will suffice if the reference numbers required for the village are printed in small type under the heading of the map. The corresponding references as per standard sheet will be printed with the map in the Central Survey Office.

45. After the map has been inked and finished as above, each sheet should be carefully compared with the adjoining sheets to see that all bends and topographical details agree.

46. Tracings from village maps showing the boundaries of reserved forests as surveyed should be sent to the District Forest Officer.

47. Village maps should be backed by a thin sheet of waste paper.

48. The persons responsible for each item of mapping should sign their names in a printed list, Form No. 29, which should be pasted on the first page of the field measurement book.

49. The map and all other records should be finally examined by the head computor, head draftsman and office manager and the result of their examination recorded in the final examination report, Form No. 30. The final examination report and all other records should be signed by the officer-in-charge.

50. After completion of mapping, a third and fair copy of the field measurement book should be prepared in the Party office.

51. When the survey is that of an estate, the land register should be prepared in Form No. 38. A fair copy of the register should also be prepared in the Party office, when not followed by record of rights operations.

When the lands in estates are surveyed at the instance of Government in order to facilitate collection of water-rate, the land register should be prepared in Form No. 38-A.

When the lands in proprietary villages are surveyed at the instance of the local boards to facilitate the levy of land-cess, the land register should be prepared in Form No. 38-B.

52. The officer-in-charge will then cause notices in Form No. 31 to be served under section 9 (2) of the Act. These notices should be accompanied by an acknowledgment, Form No. 32, which should be signed in token of the receipt of the notice and returned to the officer who issued it.

53. Appeals from the orders in these notices and from those passed under section 10 (2) are to be filled within three months of the date of the service of the notice, but the period of appeal time shall not include the time taken to secure a copy of the decision and map.

54. The appellate authority can admit of an appeal after the lapse of appeal time, provided he is satisfied that an appellant had good and sufficient cause for not preferring the appeal within the time allowed.

55. On completion of the survey in accordance with the orders passed under section 9, 10 or 11 of the Act, the officer-in-charge shall publish the notification, required by section 13 of the Act, in Form No. 55, in the District Gazette.

56. The intitial survey records of a village will consist of the following :—

(1) Boundary demarcation sketch.
(2) Traverse field books.
(3) Traverse sheets.
(4) Field demarcation sketches.
(5) Field register (in duplicate in the case of estate villages not followed by record of rights).
(6) Field measurement book (in triplicate).
(7) Inspection reports.
(8) Village map.
(9) Area list (rough and fair).
(10) Final examination report.

57. When the survey is of a Government area the duplicate and triplicate field measurement books and the fair area lists should be sent to the Collector of the district. When an estate has been surveyed the duplicate land register should be sent to the Collector of the district and the duplicate and triplicate field measurement books, fair area lists, and original land register, should be sent to the proprietor or to the manager if the estate is managed by the Court of Wards.

58. The remaining records excepting field demarcation sketches, inspection reports, area lists (rough), and final examination reports should be sent to the Central Survey Office where the authorized number of copies of village maps will be printed and distributed.

CHAPTER X.

RE-SURVEY.

PRELIMINARIES.

1. The cadastral survey, for any reason, of a taluk or other area, once before surveyed cadastrally, is called a re-survey.

2. The Director of Survey should communicate to the Collector the probable date of commencement of survey operations in each of the taluks of his district which have been put down for re-survey. Before the commencement of survey, the Collector should obtain the sanction of the Board for any proposal to subdivide any of the existing villages, and should furnish the officer-in-charge of survey with a statement of the subdivision, if sanctioned. Entire revenue villages should not be amalgamated but should be re-surveyed separately. Revision of village boundaries which may be necessary for any reason may, however, be done.

3. (*a*) Before the commencement of survey, two responsible officers, one from each of the Survey and Revenue Departments, should be deputed to examine the stock of stones in the village depots and to separate the undersized stones from the stock. Stones of the prescribed dimensions passed by the two officers should be taken over by the Survey Department up to the limit of their requirements, and paid for at the fixed selling price to the Revenue Department.

(*b*) The officers of the Revenue Department should prepare a list and have it countersigned by the Survey Party Officers concerned and get the necessary adjustments effected in the treasury accounts. The cost of the stones should be debited to " Revenue Survey Advances—Survey Officers " by transfer credit to " Revenue Survey Advances—Collectors " by attaching the countersigned list in support of the credit to the latter head. The Treasury Officer should send to the Survey Department a statement of the debits made against that department.

4. In districts where the theodolite survey has to be made afresh, the instructions in Chapters II and III should be followed.

5. When the theodolite work of the former survey is found to be satisfactory it will be sufficient to replace missing theodolite stations with the linear measurements available. Replacement of missing theodolite stations must always be inspected by a sub-section officer or head surveyor.

Where, however, a station cannot be replaced in its former position, angles should be observed over the new station and over the stations on either side and observation and measurement extended, if necessary, to other stations until the old and new angles agree within a difference of 2 minutes per angle.

6. The rules in Chapters VI and VII apply to re-surveys, but, before re-survey proper or the demarcation and measurement of holdings is commenced, it is necessary that the revenue registry of these should be brought up to date. To this end, preliminary land registers and location *sketches showing the positions of field* and subdivisions, are to be prepared khandamwar by surveyors showing the registered and existing revenue holdings.

The verification of (1) the registry of all fields, (2) the demarcation of porambokes and (3) the transfer of registry is made by a special staff working under a Revenue Officer, who will ordinarily also be the Settlement Officer where a settlement is due. This officer will for convenience be referred to as the Revenue Officer throughout these rules.

7. The location sketch should be prepared for each khandam on a conveniently large scale showing the registered field boundaries and numbers in black ink. Within the shape of each old field should be noted its area and the description of the land as given in the last adangal.

8. Surveyors should then go to field and mark in pencil the boundaries of existing holdings in the sketch after making inquiries from cultivators and village officers, writing the enjoyer's name in each subdivision and the adangal subdivision number, if any. New subdivision numbers should not be given. The nature of porambokes should be stated, whether they are true porambokes or only waste land.

9. Sivaijama cultivation and the names of the cultivators should be shown in the location sketch.

10. On completion of the location sketch, 50 per cent of the preliminary registration made should be inspected by the range deputy surveyor and 10 per cent by the sub-section officer.

11. The range deputy surveyor should then form survey fields following the rules in Chapter VI. The new field and subdivision boundaries should be inked in red in the location sketch, broken for subdivision and continuous lines for field boundaries.

12. Field and subdivision numbers should then be assigned and a fair sketch prepared leaving out enjoyers' names but containing all the other information.

Subdivisions of survey fields should be numbered and not lettered. The numbering should, as far as practicable, follow that adopted in the revenue adangals, and should be departed from only when such adherence would result in numbering not being controlled by contiguity. Where the mumbering in the adangals is irregular, the subdivision should be renumbered starting from the north-west corner of the field, so that each may adjoin the one bearing the next number.

13. The land register form No. 35 should then be written. Every old survey or subdivision number must have a corresponding new survey or subdivision number or be otherwise accounted for. The registered holders' name should be written in the appropriate column. When the registered holder is not the enjoyer, and enjoyment is not disputed, the enjoyer's name should be written in the last column, but only after making inquiries from the adjoining landholders and the village officers. If enjoyment is disputed a note to that effect should be written in the remarks column.

14. At the end of the register for each khandam should be written a statement correlating the old and new subdivision and survey field numbers.

CHAPTER XI.

RE-SURVEY.

FIELD MEASUREMENT.

1. Surveyors will be supplied with the preliminary land registers and khandam location sketches and should proceed as directed in Chapter VII, but the following additional instructions are special to re-surveys and should be obeyed carefully.

2. Stones should be planted at trijunctions of all fields, and, in addition, at bends on village poramboke field and subdivision boundaries. Old stones which do not mark a boundary should be removed and utilized and few new stones should be required.

3. In the case of village boundaries, marching with proprietary villages or estates, old survey measurements must be followed. When a Government village adjoins another, demarcation should follow enjoyment, provided the changes are not material. The orders of the officer-in-charge should be obtained in the case of any which exceeds ten cents in area.

4. Where, however, a river or stream forms the boundary between a Government village and a proprietary, or an estate, village, and the old boundary lies in the channel bed, demarcation should follow enjoyment, but the old measurement should be plotted in blue ink in the field measurement book. This should also be done between two Government villages for such of the fields as are inam. See Appendix No. VIII.

5. Rules 21 and 22, Chapter VI, give instructions for the straightening of the boundaries of poramboke fields and subdivisions and for dealing with encroachments. During a re-survey the measurements of the former survey, when reliable, should be used to see that porambokes have not been encroached upon.

During the re-survey of all roads, paths, etc., whether or not they vest in and are actually maintained by the Local Boards, the actual road, path, etc., in existence on the ground shall be taken into consideration and with reference to this, after the issue of the notice prescribed by rule 19 of Chapter VI, a definite reasonable width (which should usually be one chain or such smaller width as the poramboke field permits but should be not less than the actual existing width on the ground of the road, path, etc.) shall be demarcated as the road, path, etc., poramboke which *prima facie* vests in the Local Board. *The words "the existing road, path, etc.," mean so much of the poramboke field as is necessary for the control, maintenance and protection of the road as a highway and should be interpreted liberally to include ordinarily the drains, avenue trees and sufficient space for stocking road materials, etc., and reasonable road margin to allow for the provision*

of these conveniences if they do not exist. The rest of each existing poramboke field through which the road, path, etc., runs shall, if occupied, be separately demarcated for assignment or shall be merged with the fields of the adjacent holders as the case may be and, if unoccupied, shall be separately demarcated and registered as assessed waste, unassessed or poramboke, as the case may be, pending objections.

Wherever roads vesting in local bodies run on the banks or bunds of rivers, canals or channels or tanks, under the control of the Public Works Department or on the bunds of tanks or banks of channels under the control of the Revenue Department, the portion covered by the roads need not be subdivided and demarcated separately, and in all such cases the banks or bunds with the road and road margins should be registered as Public Works or Revenue Department poramboke of the appropriate kind.

6. Any omissions or discrepancies found in the location work should be remedied and the necessary entries made in the land register.

7. On completion of field inspection of each khandam (*see* Chapter XII) by the range deputy surveyor the duplicate field measurement book, preliminary land register and location sketch should be sent for final check to the Revenue Officer.

8. The duplicate field measurement book should be obtained from the Revenue Officer when required for inspection by the sub-section officer, section officer or by an officer. This will ordinarily be easy as the record will generally be with one of the Revenue Officer's subordinates in the village itself or in the one adjoining it.

9. The alterations asked for by the Revenue Officer, *see* rule 31 Chapter VII, should be made promptly and as a rule before the survey of the village is finished.

Doubtful cases may be referred for orders, *see* rules 31 and 32 Chapter VII.

10. *On completion of mapping* (Chapter IX) *the duplicate field* measurement book and fair area list should be sent to the Revenue Officer and the triplicate field measurement book to the Collector of the district.

11. The records to be sent to the Central Survey Office will be—

(1) Traverse field books and triangulation sketches, if any.
(2) Traverse sheets.
(3) Field measurement book (original).
(4) Village map.

CHAPTER XII.

INSPECTION OF FIELD WORK.

1. The following rules apply to initial surveys, re-surveys and soil block surveys :—

2. Field work is divided into two heads—

(*a*) Theodolite surveys.

(*b*) Field surveys.

In theodolite surveys only stone planting and line clearing require inspection. Instructions for this are given in rule 26, Chapter II.

Inspection of field surveys consists of—

(1) Inspection of registry.

(2) Inspection of demarcation and measurement.

3. A preliminary inspection of registry separately from demarcation and measurement is done only in re-surveys.

The inspector should see—

(1) that the location sketch is neat and complete and is signed by the field surveyor.

(2) that the boundaries drawn for existing holdings represent roughly the limits on the ground and that adangal subdivision numbers and names of enjoyers have been entered correctly.

Each omission or incorrect entry will be treated as an error.

The minimum daily outturn of an inspector is the check of 75 subdivisions.

4. In both initial surveys and re-surveys the entries in the land register will be checked at the same time as demarcation and measurements. The inspector should see that the register has been written as directed in rules 12 and 13, Chapter X.

5. The following will be treated as errors in demarcation :—

(*a*) Omission to plant or repair stones.

(*b*) Omission to cut appropriate marks on stones.

(*c*) Planting stones in incorrect positions.

(*d*) Omission to take notice of encroachments.

6. No percentage of inspection of demarcation will be fixed, but an inspector other than a purtaller (rule 10 below) is responsible for the correctness of demarcation on lines he has remeasured, either by calculation or directly.

7. All errors in boundary and field demarcation should be rectified and all omissions supplied by the inspecting officers both on the ground and in the records.

8. Inspection of measurement is of two kinds—

(1) Remeasurement directly, or by calculation.

(2) Check measurement or purtalling.

9. The first explains itself. The inspection should be distributed over a khandam and in fields which are difficult to measure.

10. Check-measurement or purtalling is the measurement, across a khandam, of a long line with offsets, by means of which the accuracy of some of the surveyor's measurements is verified and a series of bases are provided for plotting the village map. Where the village map has already been plotted, the purtal serves to check the plotting of the map.

11. Purtal lines should as a rule start from and close on theodolite stations, but, where this is not easy, the line may start from or close on a point on the line between two theodolite stations.

12. All field trijunctions within 5 chains of the line should be offsetted and the distances between trijunctions calculated, where possible, using the hypotenuse tables. These distances should be remeasured when the difference between the surveyor's and the calculated distance exceeds the limit of error (rule 17 below).

13. The purtal line should be drawn in the khandam sketch, each point offsetted being numbered. The chain and offset measurements should be entered in the margin and the latter numbered to correspond with the sketch.

14. For inspection purposes surveyors are divided into two classes. In the first class will be placed those who have been selected by the officer-in-charge and whose work has been consistently good, and the rest in the second class. The amount of inspection—remeasurement—required is 20 per cent of the linear measurement done by a field surveyor.

15. The distribution of this percentage will be as follows :—

Head surveyor or sub-section officer —5 per cent.
Range deputy surveyor—15 per cent.

16. An inspection report, Form No. 36, must be written when an inspection is made or a purtal line run. Calculated measurements should be shown in red ink and these remeasured in black ink. Officers and Sub-Assistants need not fill up page 3 in detail. It will be sufficient to show the number of lines and chains inspected in each field, but the original and inspector's measurement must be given when errors are found.

17. Differences found in measurements should be classed as errors as follows :—

Measurements of diagonals and field and subdivision boundaries.

In lines of 5 chains and under a difference exceeding 3 links is an error.

In lines of over 5 chains a difference of more than one link per chain is an error up to a limit of 10 links, but any difference of over 10 links is an error.

Measurements on diagonal lines, where the cross staff has been used, or offset measurements.

In lines of 5 chains and under, a difference exceeding 4 links is an error.

In lines of over 5 chains, a difference of more than one link per chain is an error up to a limit of 10 links, but any difference of over 10 links is an error.

18. The quality of work will depend on the percentage of error either in registry, demarcation or measurement. When registry and demarcation are inspected at the same time, the items under each should be combined for valuation. Items inspected under measurement should be valued by themselves. Differences in measurement consequent on alteration of demarcation by inspecting officers should not be reckoned as errors in measurement.

19. The classification should be determined as follows :—

Number of errors per 100 lines measured or per 100 items inspected under registry or demarcation.	Quality of work.
Under 5	Good.
From 5 to 10	Fair.
More than 10	Bad.

But no work should be classed as bad unless 11 errors have been found.

20. For the purpose of the preceding two rules, every measurement, whether F line, G line or offset, should be counted as one line. But where in a G line from which a number of offsets has been measured an error made in one chain line distance is carried forward to succeeding chain line distances, the errors in the latter should not be reckoned as such for classifying the quality of work.

21. The unit for determining the quality of the field surveyor's work will be the khandam.

22. Every inspection report should be carefully examined by the Officer-in-charge who should write his orders in the space provided for the purpose in the first page.

23. Work classed as "bad" should, as a rule, be ordered for revision. But before doing so, the Officer-in charge should satisfy himself that the nature of errors is such as to warrant revision. For example, if in 100 lines remeasured, there are 8 errors under 5 links and 4 errors under 10 links, revision of work should not be necessary. The surveyor should be punished for indifferent chaining.

24. Work may require revision in registry, demarcation or measurement. When revision is ordered the revising surveyor, who should not be below the grade of the deputy surveyor, should inspect the fields not already checked dealing only with the class of items under which the work has been condemned and should continue his inspection until the work can be classed as fair on the combined inspection reports.

25. A statement showing the cost of revision should be attached to the inspection reports and submitted to the Officer-in-charge who will decide how much should be recovered from the surveyor responsible.

26. When measurements or items checked by an inspector are found incorrect, the other fields examined by him should be checked.

27. Inspectors should sign their names in full in red ink in the original field measurement book, at the bottom of the map of each field inspected by them, noting above their signatures the number of lines tested. If the surveyor's measurements agree with the inspector's within the margin of error allowed (rule 17 above) they should be ticked off in red ink. If this margin is exceeded the surveyor's measurements should be lightly scored through in red ink and the inspector's measurements written above them with the inspectors' initials. This should be done in both copies of the field measurement book.

28. Inspectors should also compare the measurements and test the plotting in maps of fields bordering those inspected and the corresponding ones in the duplicate field measurement book. Comparison should be continued as follows :—

Range deputy surveyors.—18 per cent of the fields in the khandam including those already compared.

Head surveyors or sub-section officers—5 per cent.

The result of the comparison should be written on the second page of the inspection report. If more than one error is found per field map, the rest of the maps should be compared.

29. When a surveyor attends during inspection, his chain should be tested and the result written in his diary. Chains found incorrect should be put right.

30. A range deputy surveyor, head surveyor or sub-section officer is expected to check 40 linear miles a month by re-measurement or calculation.

31. Every khandam must be inspected by a head surveyor or sub-section officer.

32. A sub-Assistant's inspection should be distributed over his charge as widely as possible and should deal generally with the work of the second-class surveyors.

33. A gazetted officer should inspect every village, but where villages are small, it will suffice if one inspection is done in every 4 square miles in villages after completion of survey. If there is no additional officer in a Party, a Sub-Assistant may be deputed for gazetted officer's inspection with the previous sanction of the Director. A Sub-Assistant should not be allowed to do a gazetted officers' s inspection in his own section.

34. The completed records of each khandam should be examined by the section officer and the result of his examination recorded in the field final examination report—Form No. 37.

CHAPTER XIII.

RULES FOR THE CONDUCT OF TOWN SURVEYS.

PRELIMINARIES.

1. Immediately the survey of a town has been ordered under section 5 or 17, or both, of the Madras Survey and Boundaries Act, 1923, the Officer-in-charge of the survey should publish in two successive issues of the District Gazette a notification in Form No. 1 under section 6 (1) of the Act. A similar notification should be posted in the Municipal office as well as in the village chavadi, or, if there is no village chavadi, in some conspicuous place in the villages, comprised in the town, as soon as the survey is about to commence.

2. Before commencing the survey, the Officer in charge should send special notices to the Municipal Chairman, District Collector and the Revenue Divisional Officer, intimating the date of commencement of survey.

3. He should also request the Collector to obtain the sanction of the Board for the appointment of the Special Officers under G.Os. No. 1584, Revenue, dated 2nd June 1914, and No. 2038, M., dated 28th November 1917, specifying the dates by which the services of each will probably be required.

4. The Officer-in-charge should obtain from the Central Survey Office the maps and records of all surveys cadastral or topographical which may have been made of the villages included in the town. This is very important since, if the open fields in such villages have already been cadastrally surveyed, and the survey meets the requirements of the Revenue Department, all that is necessary during the Town Survey is merely to incorporate that survey in the Town Survey records carrying out only such supplemental survey as may be required under rule 109 infra.

5. With such cadastral and topographical maps of the town as are available, the Sub-Assistant or head surveyor, in company with the municipal subordinate whom the Chairman should be requested to depute for the purpose, should inspect the town and mark in the maps the boundaries of the municipality and of the wards or divisions into which it is divided.

6. From these maps a tracing or an enlargement, where necessary, should be prepared showing the municipal and ward boundaries and, also the boundaries of the cadastrally surveyed fields in the villages or portions of villages included within the town.

7. The theodolite stations and field stones fixed during the cadastral survey should be noted in the tracing.

8. The blocks into which the town should be divided for survey should then be marked in the tracing. This tracing will be called the " index map ".

9. The size of a block should be about 10 acres in crowded localities such as streets and bazaars, 40 acres in less crowded localities such as gardens and compounds, and 160 acres in cultivated and more open localities such as paddy fields and waste lands.

10. The sides of the block should, as far as possible, be made equal, so that each block when mapped may not occupy more than one sheet, size 30 inches by 27 inches.

11. The block boundaries should follow streets, roads, rivers, etc., except in open localities where they should run along field boundaries.

12. Village and khandam boundaries, traversed in the past should, as a rule, be adopted as block boundaries so that the amount of theodolite work required for the town survey may be reduced to a minimum.

13. As the marking of block proceeds, a rough estimate should be prepared of the stones required for demarcation. In town surveys, field stones will not be required to mark the boundaries of properties defined by masonry walls.

14. The stones should be of granite. They should be of three kinds as described below :—

Theodolite stations.—Size 3 feet long by 9 inches square or 18 inches long by 8 inches square with a flat top on which the broad arrow should be deeply cut. The point of the arrow should be cut in the middle of the top of the stone and should serve as a plummet hole. The three lines forming the broad arrow should each be not less than 2½ inches long and ½ inch deep.

(*N.B.*—Stores of the larger size should be used for marking the boundaries of the municipality and of open blocks. The smaller are intended for use in streets).

Chain survey stones.—Size 1 foot long by 6 inches square with a St. George's cross on the-top and arrow mark on the side.

Field stones.—Size 24 inches long by 6 inches square with the arrow cut on one side.

When these are used to demarcate subdivisions, the letter 'S' should be cut on them at the time of planting.

15. The rules in Chapter I should, as far as possible, be followed in regard to the supply of stones required for demarcation.

16. The surveyors employed on town surveys should be specially selected men of experience and tried ability not below the grade of Deputy Surveyor.

Boundary demarcation.

17. Having for his guidance the index map on which the block boundaries are shown, the surveyor will demarcate the boundaries of blocks fixing theodolite stations at points where three or more streets or roads meet and at important bends on block boundaries.

18. As the theodolite survey of the exterior boundaries of blocks will not afford sufficient data for plotting the fields in the interior thereof, additional points should be fixed along roads and streets within the blocks on straight lines between two theodolite stations.

19. The additional points should be marked with chain survey stones. If these stones are planted in roadways, care should be taken to bury them at least two or three inches below the surface of the ground.

20. Where it is observed that any street, lane, etc., cannot be fixed in position, otherwise than by a theodolite traverse, theodolite stations should also be planted along such streets, lanes, etc.

21. In close or 10-acre blocks, the theodolite stations should not be more than 500 feet apart.

22. In medium and open blocks of 40 and 160 acres, respectively, theodolite stations may be, as far apart as possible, provided each station is clearly visible from the adjoining station on either side.

23. Where block boundaries run along roads or streets, the station stones must be planted at the sides of the roads or streets, not in the middle. They should be planted alternately on the right and the left sides of the road, so that the chain lines may, for facility of measurement traverse the road diagonally ; thus if station No. 2 is on the right side of road, stations Nos. 1 and 3 will be on the left side. These stones should be buried two or three inches below the surface of the ground so as not to interfere with traffic.

24. In open localities, however, the stones should be fixed so as to be visible above the ground for one-third of their length.

25. A new station should be fixed at the point where a block boundary crosses a village or khandam boundary already traversed if there is no theodolite station at the point already.

26. The distance between theodolite stations should be carefully measured with the hundred feet chain and recorded in a field book.

27. The position of each theodolite and chain survey station embedded in a road or street should be independently determined by measuring with the tape and recording to the nearest inch, in a field book, the tie lines to it from neighbouring permanent objects.

28. From the index map, a sketch map should be prepared for each ward, roughly to scale 20 inches=1 mile. The sketch map should show the block boundaries, distinguishing old theodolite stations from the new. The symbol for new theodolite stations will be a triangle, while for old ones the symbol shown in the cadastral survey maps should be adopted.

29. The sketch map should also show in approximate positions all important buildings, temples, tanks, rivers, rail-roads, etc.

30. The blocks in each ward should be numbered consecutively commencing from the north-west corner.

31. On the upper part of the sketch should be entered the names of the districts and town and the letter of the ward. The letter of the adjoining wards should also be shown in the sketch.

32. The surveyor should sign the sketch in the lower right hand corner and enter the dates of commencement and completion of demarcation.

33. Traverse survey with the theodolite will begin as soon as possible after the demarcation of the blocks has been inspected and passed by a head surveyor or sub-assistant.

Traverse survey.

34. The head surveyor or sub-assistant will give notice to the chairman each day of the streets to be surveyed the next day and the chairman will close these streets to traffic under section 172 of the Madras Municipalities Act, 1920, while measurement is in progress.

35. For his guidance the theodolite surveyor should be furnished with—

(1) a copy of the sketch map ; and

(2) a copy of the field book referred to in rule 27 ; showing only the tie line measurements and no traverse distances.

36. The outer boundary of the town should surveyed first. The survey should start from and close on old traverse work. The angles and distances should be entered in their proper places in the tie line field books.

37. The ward boundaries should next be surveyed and then the block boundaries in the order of the numbers of the blocks as a rule.

38. Such of the boundaries as have been surveyed in the past should not be surveyed again, but the new traverses should be connected with the old ones wherever possible.

39. Trigonometrical stations, if any within the town, should be connected with the nearest traverse work.

40. The town and ward boundaries should be surveyed by a sub-assistant or head surveyor. Their survey should be executed with the same precision and care as that of main circuits in cadastral surveys. The survey of block boundaries may be entrusted to first-class deputy surveyors.

41. Each theodolite surveyor will be given two peons and four measurers and will be provided with a good 6 or 7 inch theodolite, two hundred feet chains, four flags, one hundred feet steel tape and a spring balance.

42. He should carefully test his chain daily with the steel tape and correct it if necessary. At every station he should observe angles in accordance with the instructions in Rule 7, Chapter III. The observations should be made as far as possible to arrows, not to flag-staves, so that greater precision in observation may be secured.

43. After angles have been taken at a station the distances between that and the next station should be carefully measured. The surveyor must himself see that the chain follows the straight line between the two stations.

44. All the entries in the traverse field book must be in ink. If a correction is made, the original entry must be scored through, not erased and should be distinctly visible.

45. Observations for azimuth should be taken by the officer in charge or by a sub-assistant at intervals of 40 stations on town and ward boundaries. But this will not be necessary where the available cadastral survey traverses are sufficient for checking the accuracy of the town survey traverses.

Traverse computation.

46. Traverse computation should be done in general accordance with the instructions contained in Chapter IV, with this difference that no main circut lines from G.T.S. need be taken.

47. The town boundary and ward traverses should be dealt with in the same manner as village boundary traverses and the block traverses as khandam traverses in ordinary cadastral surveys, only the limit of error in distances in the former is 1 in 2,000 and in the later 1 in 1,000.

48. Correction for convergency of meridian need be applied only if similar corrections have been applied in the connected old traverse work.

49. Co-ordinates from the origin of the tarverse should be computed for each G.T. station mentioned in rule 39 supra.

Traverse plotting.

50. The traverse of each block together with the G.T. station contained in it should be plotted in a separate sheet, the scale of the plot depending on the area thus—

10-acre or close block, scale 1″ = 33 feet or 160 inches = 1 mile.

40-acre or medium block, scale 1″ = 66 feet or 80 inches = 1 mile.

160-acre or open block, scale 1″ = 132 feet or 40 inches = 1 mile.

51. The plot should be in duplicate, on sheets of drawing cartridge roll paper cut to size 30 inches by 27 inches and in it should also be shown the interior chain survey stations. The section or rectangle within the sheet will measure about 24 inches by 24 inches and will be divided into 16 squares. The side of each square on the 160″ scale will measure 200 feet on the 80-inch scale 400 feet and on the 40-inch scale 800 feet.

52. A triplicate copy of the plot should be pricked from the original or duplicate, on royal double elephant, 80 lb. paper to serve as the basis of the demarcation sketch referred to in rule 83 infra.

53. The traverse of each ward should be plotted on scale 40″= 1 mile, and that of the town on scale 16″=1 mile.

54. These plots should be on full sheets of drawing cartridge roll paper cut to size 40 inches by 27 inches. The section or rectangle within the sheet will measure about 30 inches by 23 inches and will be divided into 12 squares. The side of each square will measure 1,000 feet on the 40 inches scale and 2,500 feet on the 16 inches scale.

55. The block boundaries should be plotted in the traverse plot of each ward and the ward boundaries in the traverse plot of the own.

56. The head draughtsman should carefully examine the squaring of each sheet and also the scale drawn upon the map.

57. The traverse plotting should be examined and the stations inked in blue. The traverse lines should be drawn in pencil.

Field demarcation.

58. Before field demarcation commences, the officer in charge should obtain from the Municipal Chairman three separate lists showing—

(i) streets in which street alignments are proposed to be laid down ;

(ii) encroachments registered in the municipal accounts ; and

(iii) all municipal lands including all roads and streets.

59. He should also obtain from the tahsildar of the taluk a list of Government lands together with a list of encroachments registered in the revenue accounts.

60. These lists should be furnished to the sub-assistant in charge of the section for the guidance of the surveyors in the demarcation of properties.

61. The demarcation and measurement of properties will be conducted by deputy surveyors under the supervision of head surveyors and sub-assistants.

62. A batch of five deputy surveyors will form a head surveyor's sub-section and four sub-sections will form a sub-assistant's section.

63. The officer in charge of the party should send a notice in Form No. 1 to the Chairman of the Municipality concerned, asking him to proclaim the survey impending, by beat of tom-tom.

64. Before he begins work, each surveyor will be furnished with a credential in Form No. 39.

65. He will also be furnished with (1) the skeleton traverse plot—see rule 51—and (2) the triplicate copy referred to in rule 52 supra, of the block to be surveyed by him.

66. The section officer will furnish to the surveyor extracts from the lists of Government and municipal fields and of encroachments referred to in rules 58 and 59 supra, so far as they relate to the block issued to him.

67. The surveyor should ascertain the names of the owners and occupiers of the properties which he has to demarcate and measure the next day and serve on them written notices in Form No. 10.

68. The survey of the blocks in which street alignments have to be laid down should be taken up first and then the other blocks in serial of wards and blocks.

69. The surveyor should commence his work from some convenient point on the block boundary.

70. The boundaries between streets, roads, etc., and private property should be ascertained and demarcated in accordance with accounts, all encroachments inclusive of those listed under rules 58 (2) and 59 supra being excluded from private properties and included in the streets, etc.

71. In the case of streets subject to the street alignments operations, all encroachments should be shown in the skeleton traverse plot and the triplicate copy of it for the information of the special officer to be appointed for the conduct of such operations but should not be demarcated.

72. Every separate holding whether built upon or not, to which a separate number is assigned by the municipal or revenue authorities, should be considered a separate property and be formed into and demarcated as a separate survey field.

73. Where property originally owned by a single person is now in the occupation of more individuals than one, each holding should be demarcated as a separate survey field, although the division of ownership is not recognized in either municipal or revenue registers. Property whose registry may have been dispensed with under sections 83 and 84 of the District Municipalities Act V of 1920, should also be demarcated as a separate survey field.

Where properties owned by different individuals and bearing different assignment numbers pass into the ownership of a single individual they may be clubbed to form one field provided there is alteration or obliteration of the structures and the different numbers form one entire holding on ground.

74. Roads, streets, lanes, rivers, canals, tanks, and other Government and municipal lands should be demarcated as separate survey fields.

75. The demarcation of all public lands other than streets, whether municipal or Government, should be conducted with reference to municipal and revenue accounts and land plans, if any.

76. In demarcating the boundaries between private properties present occupation will be adhered to. Trifling disputes about the boundaries between neighbouring properties should, as far as possible, be amicably settled.

77. Where there is no distinct boundary between two properties which should be separately marked or where the boundary is disputed, it must be laid down according to the revenue or municipal records or as ascertained from the village officers and from such other evidence as may be available.

78. In the cultivated and more open parts of the town, boundaries of properties must be demarcated with field stones ; but in the more crowded parts of the town, field stones will not be required where permanent masonry structures define the boundaries.

79. Open localities falling within the limits of a municipality may be of the following descriptions :—

(1) Government lands once cadastrally surveyed but not resurveyed.

(2) Government lands resurveyed.

(3) Non-Government lands cadastrally surveyed.

(4) Non-Government lands not cadastrally surveyed.

80. In areas under item 1, survey and demarcation should be made in accordance with the rules in Chapters VI, VII, X and XI. Where old marks have disappeared new stones should be planted according to the existing limits of enjoyment, care being taken however, to see that the resurvey field boundaries do not materially differ from those of the original survey. A comparison of the original survey village map with the ground will show where such material differences, if any, exist ; and in those cases, the surveyor should restore the original survey field boundaries as far as may be practicable with reference to the village map. Missing theodolite stations should be replaced with only the chain and cross staff except where they are contiguous to stations of the new town survey traverse, or are altered by reason of their falling in the bed of a stream, etc.

81. In areas under items (2) and (3) the town survey operations will be confined to the demarcation and survey of any new roads, railways, canals, etc., that may have come into existence after the survey.

82. In areas under item (4) no cadastral survey should be conducted unless specially ordered.

83. On the triplicate copy of the skeleton block map referred to in rules 52, 65 and 71 supra should be shown in black ink the survey field formed in that block. This will be called the demarcation sketch of the block. In this sketch, limits of encroachments on streets subject to street alignment operations should also be shown, but in blue ink, to distinguish them from property limits as fixed at survey.

84. The fields should be numbered consecutively for each block in Arabic numerals beginning with 1 and a rough field register in

Form No. 51 should be prepared for the fields in each block, but in it, only columns (1)—(5) and (16)—(18) should be filled in by the surveyor.

85. The field register should be written from the revenue accounts of the villages comprised within the town, and from the municipal accounts (*i.e.*, house-tax registers).

86. All old numbers should be accounted for in the field register in the column provided for the purpose.

87. The names of roads, streets, lanes, public offices and buildings, channels, tanks and temples should be legibly written in vernacular in the remarks column of the register and also in the field demarcation sketch. Special attention should be paid to the correct spelling of names which should be carefully ascertained.

88. A list of Government and municipal lands in the block should be made out at the end of the field register.

89. The surveyor should sign the register.

90. *Field measurement.*—The measurement of all boundaries should be carried out at the same time as the demarcation and by the same surveyor. All measurements should be made with the 100-feet chain or with a measuring tape. Measurement should be recorded up to the nearest half-foot in the case of street and to the nearest foot in the case of boundaries between private properties, fractions of a foot being omitted in the latter.

91. Although, as stated in rule 90 above, measurements should be recorded generally up to the nearest foot, in the case of houses, however, it is necessary, that the measurements should be recorded in feet and inches as otherwise differences between the length of the common boundary of two adjoining rows of houses cannot be adjusted with accuracy—vide diagrams given below :—

(25) 20′ 6″	(26) 29′ 6″	(27) = 136′ 4″ 19′ 6″	(28) 20′ 8″	(29) 30′ 8″	(30) 15′ 6″
(31) 30′ 8″	(32) 19′ 4″	(33) 25′ 6″ = 136′ 4″	(34) 35′ 6″	(35) 25′ 4″	

The above explains how measurements should be made and recorded in the field demarcation sketch—

(25) 21′	(26) 30′	(27) = 139′ 20′	(28) 21′	(29) 31′	(30) 16′
(31) 1′	(32) 19′	(33) 26′ = 137′	(34) 36′	(35) 25′	

The above shows how measurements would be recorded by the surveyor if he disregards inches.

(25)	(26)	(27)	(28)	(29)	(30)
20′	30′	19′ — 136′	21′	31′	15′

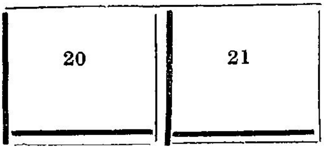
(31)	(32)	(33)	(34)	(35)
31′	19′	25′—136′	36′	25′

This is how measurements should be adjusted and recorded in the rough block map referred to in rule 103 below.

92. Open spaces included in house properties should be measured separately from portions occupied by buildings but small open court-yards inside houses need not be shown separately. Tiled and terraced portions should be distinguished from thatched portions, the symbol to be used for the former being cross lines from south-west to north-east and for the latter from the north-west to south-east. Whether a house is terraced, tiled or thatched should be noted in the last column of the field register.

N.B.—Measurements relating to encroachments on streets subject to street alignment operations should be distinct from those of house properties.

93. The measurements taken for each house should show clearly whether they include or exclude the breadth of the wall enclosing the house. No doubt can exist about the front wall of a house ; but as regards the other three walls, either one, two or all the three may belong to it or to the houses adjoining.



(1) The western and southern walls in each of fields Nos. 20, 21 belong to and are included in it.
(2) Here the line to be drawn in red ink is indicated by a thick black line.

94. In order that the survey records may show what walls belong to each house, the survey should draw in the demarcation sketch a thin red line along the boundary of that house in which the wall is included—vide diagram in the margin.

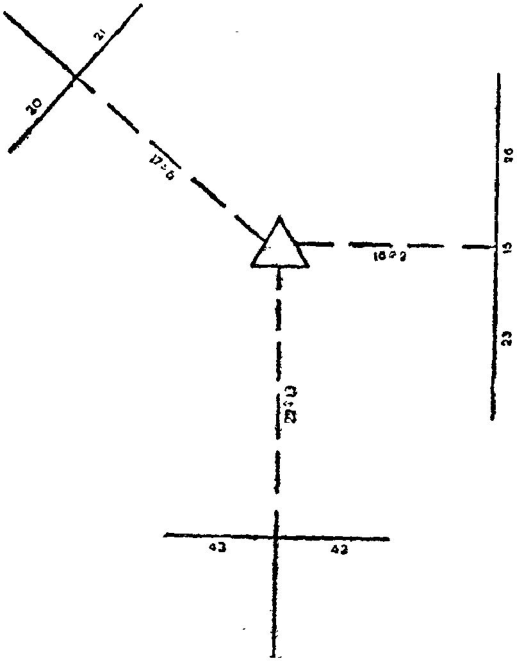
95. The distance between theodolite stations and chain survey stations, must be carefully chained and offsets taken to the field corners on both sides of the chain lines. Offsets should also be taken to corners of encroachments on streets subject to street alignment operations.

96. The check line measurements to theodolite and chain survey stations referred to in rule 27 above should be verified and recorded to the nearest inch in the field book—vide diagram shown below rule 98.

97. There should be atleast three check lines and from different directions.

98. [*Deleted.*]

99. Details, such as buildings, wells, telegraph posts, telephone posts and lines, letter boxes, etc., should be fixed by measurement.



100. All measurements should be legibly entered in black ink in the demarcation sketch except those relating to encroachments on streets where street alignments are to be laid down which should be in blue.

101. In the skeleton traverse plot, furnished to him—vide rule 65—the surveyor should first plot in pencil the street boundaries with the measurements recorded in the demarcation sketch. He should then plot the fields measured by him each day. The plotting should be checked by the outer boundary measurements and should on no account be allowed to fall into arrears.

102. The measurement of no new field should be taken up while the plotting of any field already measured is incomplete.

103. The plot completed under rule 101 will be called the rough block map. In it will be drawn in pencil field boundaries by continuous lines and the limits of encroachments by dotted lines. The lines should be drawn very fine.

104. When the plotting of all the fields in the block has been completed, the field boudaries should be neatly inked and all measurements neatly and legibly entered in black ink, the boundaries and measurements pertaining to encroachments being drawn in blue.

105. Where chain line and offset measurements tend to overcrowd the map, they should be recorded in the margin of the map, the starting and closing points of each distance measured being distinguished by letters in the map and in the margin.

106. Theodolite stations and field stones fixed during the town survey should be distinguished by triangles and small squares respectively. Chain survey stones should be denoted by a circle with a dot in the centre. All other stones and details should be shown by their appropriate symbols—vide Appendix V.

107. The surveyor should sign the field demarcation sketch and the rough block map at the lower left-hand corner and enter in both the dates of commencement and completion of survey.

108. As soon as the survey of a block is completed he should forward the demarcation sketch, field register and rough block map to the sub-section officer.

109. Open localities falling within the limits of a municipality should be dealt with as directed in rules 79—82.

110. The fields so dealt with should be measured with a feet chain.

111. In the case of fields cadastrally surveyed, and not dealt with during the town survey , the measurements to be entered in the rough block maps should be those of the cadastral survey converted into feet, but measurements to details need not be entered.

Field Inspection.

112. The sub-section officer should inspect the work of the surveyors under his charge while the survey of each block is in progress and also after its completion.

113. He should inspect the blocks in which street alignments have to be laid in advance of other blocks so that there may be no delay in furnishing records to the special officer appointed for the purpose.

114. He should verify the entries in the field register for all the fields in the block and test not less than 15 per cent of the surveyor's work preparing at the same time inspection reports in Form No. 40.

115. When verifying the entries in the field register, he should see whether the red lines in the demarcation sketch correctly indicate the ownership of walls.

116. The sub-section officer's testing will chiefly consist of remeasurements of the outer boundaries of houses.

117. He should carefully examine the list of Government and municipal lands and see that they have been correctly demarcated and measured.

The Register of Encroachments in Form No. 121 should be completed in accordance with the instructions in rule 198.

118. He should see that all names which should appear in the map have been legibly written and correctly spelt.

119. The section officer should inspect 5 per cent of the work of the surveyors in his section and prepare his inspection reports in Form No. 40.

120. His inspections, which will generally be made after the completion of each block, should be distributed so as to afford a criterion of the general accuracy of the survey. Blocks, the records of which have to be furnished to the special officer for laying down street alignments, should be taken up for inspection and completed before others.

121. No error of more than one foot should be passed by inspecting officers either in measurement or in plotting.

122. All errors should be neatly corrected in red ink in the field demarcation sketch and in the rough block map.

123. If the inspection of the sub-section officer discloses errors in more than 10 per cent of the lines measured in any block the section officer should himself inspect that block and if the two inspections combined should still indicate a similar percentage submit a special report to the officer in charge who will, after himself inspecting if necessary portion or portions of the surveyor's work, decide whether the work should be revised.

124. When revision is ordered, the revision surveyor should be furnished with a fresh skeleton plot of the block, a copy of the field demarcation sketch without measurements and the field register.

125. The officer in charge should do, not less than twenty days inspection a month. At the rate of even one block a day, he should be able to inspect the work of twenty surveyors each month and form a correct idea of the quality of the work of each surveyor and get rid of such men as are not up to the mark.

126. All complaints under section 10 of the Act, i.e., disputes arising during the course of the survey, should be inquired into and disposed of by the sub-section officer.

127. As soon as the survey and inspection of a sufficient numbers of blocks are completed, the officer in charge should address the Collector for the appointment of the special officers contemplated in G.Os. No. 1584, Revenue , dated 2nd June 1914, and No. 2038, M., dated 28th November 1917. He will at the same time advise the Collector, as to the desirability of appointing one and the same officer for performing the functions of both.

128. The completed records should be finally examined by the section officer and the demarcation sketch encroachment register and field register furnished without delay to the special officer for verification of the boundaries of the streets as well as other lands which belong to Government and the municipality.

129. The chief duties of the Special Officer appointed to watch the interests of Government will be—

(1) To see that all Government lands and lands assessed to Government revenue including quit-rent are properly registered and

surveyed, to inspect every line of demarcation between the street and private property and not merely the encroachments marked by the survey staff, verify whether any boundary requires alteration, detect cases of encroachments not noticed by the survey staff and sign every one of the demarcation sketches. For this purpose, in areas not previously surveyed, he should treat all temporary structures and all projections that tend to make the streets too narrow as encroachments and should investigate every such case. Unobjectionable encroachments or those unsupported by any reasonable evidence of public ownership may be excluded from the streets. The unobjectionable encroachments will then be dealt with under the assignment rules applicable to them by the authority competent to do so. In areas previously surveyed, the previous survey record should prove a useful guide.

(2) to reconcile the old cadastral survey numbers with the new town survey numbers and revise the adangals for villages or portions of villages situated within the municipal limits by bringing up to date or correctly entering the registry of lands assessed to Government revenue under the supervision of the Special Settlement Officer or if the survey is not followed by re-settlement of the Revenue Divisional Officer and Collector ;

(3) to fill in carefully the remaining columns except 13 of the field register handed over to him;

(4) to accept notices under sections 9(2) and 10 (2) of Act VIII of 1923 on behalf of Government, to verify whether lands in which Government have an interest have been prejudicially affected as a result of the survey and to file appeals wherever necessary under the orders of the Settlement Officer or Revenue Divisional Officer and Collector as the case may be ; and

(5) when the town survey is not immediately followed by re-settlement to hand over to the Collector a fair adangal and a fair chitta based on the town survey for the portions of each revenue village included in the municipality. This cannot be done until the survey is final and fair areas known but they can be got ready except for the entry of areas and assessment which will not be a long process. When re-settlement follows the town survey, the fair adangal and chitta will be issued by the Special Settlement Officer as part of his fair accounts to the Collector.

The special officer will, after filling in the remaining columns of field register and verifying the registry and bringing it up to date, return the records to the Section Officer, furnising him with a list of such alterations as he thinks necessary stating reasons for each.

130. The section officer will, on receipt of the records, give effect to such of the alterations proposed by the special officer as he accepts, and as regards the others advise him to prefer land complaints under the Act stating his reasons in each case in the appropriate column of the list.

131. The land complaints preferred by the special officer should be promptly disposed of, those relating to streets in which street alignments have to be laid down being given preference.

132. The records will then be finally examined by the section officer and the result of his examination recorded in Form No. 41.

133. Tracings of fields in which street alignment work is to be under taken, and a copy of the land register containing entries for the street fields and those adjoining, will be furnished to the special officer.

Street alignment.

134. The Appendix to these rules contain the rules issued by Government in the matter of the determination and survey of street alignments.

135. A deputy surveyor should be placed at the disposal of the special officer to assist him generally.

136. As the street alignments will eventually form the common boundaries of properties and the streets on which they abut, the special officer will plot them in the tracings supplied—vide Rule 133.

137. Where the street alignments are not conterminous with boundaries of properties as demarcated at the survey the stones planned at the survey should be removed and utilized for street alignments as far as may be necessary.

138. The numbering of subdivisions as per A, B, C registers should be consecutive and separate for each street field.

139. When the street alignments shall have been determined, surveyed and plotted, the special officer will send the records of the blocks concerned to the officer in charge of the survey. The special officer will issue notices under section 9 (2) and notification under section 13 for street alignment operations simultaneously for the whole town or any part thereof.

Mapping.

140. On receipt of the records of each block in office, the measurements recorded in the rough block map should be compared with those in the field demarcation sketch.

141. The measurements for the common boundaries between adjoining properties and blocks should then be carefully examined to see whether they agree. There should be no difference between the measurements of the same lines in adjoining fields and blocks. Discrepancies, if any, should be noted in Form No. 42 and adjusted with reference to the measurements recorded in the field demarcation sketch or to the diagonal and offset measurements. If they cannot be so adjusted, the lines concerned should be sent out for remeasurement and the remeasured distances adopted.

142. With the measurements recorded in the rough block map, the fair map should be plotted on the second copy of the skeleton traverse plot. Where the plotting does not close, the errors will be shown in the map by a cross mark on the lines that do not close and also noted in a discrepancy list in Form No. 25. For such errors as cannot be rectified in office, sketches showing the lines where errors are suspected should be prepared and sent out to field for remeasurement.

143. Field boundaries and details should be neatly drawn in pencil. Boundaries of subdivisions as per A, B, C registers should be indicated by broken pencil lines. The plotting should be examined and the shapes and details compared with those of the adjoining blocks.

144. For portions cadastrally surveyed the block maps should be plotted on the 40-inch scale.

145. The conversion of measurements from feet to links—Rule 111—should be checked.

146. Fields, including cadastrally surveyed fields, should be numbered consecutively for each block.

147. [*Deleted*].

148. The field and subdivision boundaries and details should then be linked—the subdivision boundaries being shown in continuous blue lines—and field numbers typed to suit photo, reduction to half scale.

Area computation.

149. The area of each field should be recorded in acres and square feet. Areas of fields rectangular or nearly so should be calculated by the khasra method from measurements entered in the rough block map. The calculations should be entered in the area calculation sheet form No. 43.

150. Areas of the fields already cadastrally surveyed should not be recomputed except where they are broken up into new fields under rule 109 supra but should be converted to acres and square feet and recorded in the area computation sheet form No. 44. The areas of the excepted fields should be computed from the block map with area square.

151. The areas of all other fields should be taken by computing scale.

152. The town survey maps will be on three different scales, viz.—

168 inches = 1 mile, i.e., 1″ = 33 feet.
80 inches = 1 mile, i.e., 1″ = 66 feet.
40 inches = 1 mile, i.e., 1″ = 132 feet.

153. The computing scales and area papers to be used for the three kinds of maps will be as follows :—

Scale of map—inches to a mile.	Computing Scale to be used—inches to a mile.	Area paper to be used.
160 } 80 }	16	Paper with one-fifth inch squares.
40	40	Paper with one-fourth inch squares.

154. The 16-inch computing scale contains 10 main divisions, 100 minor divisons 1,000 subdivisions. For the sake of convenience each subdivision may be called a unit.

155. As stated in rule 154 above, the 16 -inch computing scale contains 1,000 units. So, when using the 16-inch scale for computing, areas in 160-inch maps one sweep may, for the sake of convenience be said to read 1,000 units.

156. To avoid confusion, the word ' acres ' at the right side of the computing scale should be scored out and two ciphers added in black to each of the figures denoting 10 main division hitherto read as acres.

157. With this alteration, the scale will read as follows :—

Each subdivision	·0001 acre or	1 unit.
,, minor division	·0010 acre or	10 units.
,, main ,,	·0100 acre or	100 units.
One sweep	·1000 acre or	1,000 units.

158. The units as read on the computing scale should be entered in form No. 45 field area computation sheet. The areas should be retaken by another computor and the two computations compared. The following difference is allowed :—

1 to 25 units	1 unit.
26 to 50 ,, ...	2 units.
51 to 75 ,, ...	3 ,,
76 to 100 ,, ...	4 ,,
101 to 500 ,, ...	5 ,,
Above 500 ,, ...	1 per cent.

159. Fields of which the difference exceeds the above limit should be issued for third computation and also for fourth computation if necessary, and so on, until any two computations agree within the limit of difference allowed.

160. Of the two computations which agree within the limit of difference allowed, a mean should be taken and entered in column 2 of the final field area computation sheet form No. 45. Still the areas will be in units only.

161. The units read off from the 160-inch map should be multiplied by 4·36 in order to obtain the true area in square feet.

162. As stated in rule 153 above, the same computing scale (containing 1,000 subdivisions) and the same area paper (with one-fifth inch squares) as was used for the 160-inch map should be used for the 80-inch map also, and the readings (units) obtained should be entered in the area computation sheets. The difference allowed between any two computations on the 80-inch map will be the same as that allowed for computation on the 160-inch map. But in converting the readings to square feet in the final field area computation sheet the units read off from the 80-inch map should be multiplied by 17·4 in order to obtain the true area in square feet.

163. The 40-inch computing scale contains 20 main divisions, reading 10 cents each. Each main division contains 10 minor divisions, each minor division reading one cent. Each minor division is again divided into five subdivisions, each subdivision reading one-fifth or ·2 of a cent.

164. One sweep on this scale with area paper containing one-fourth-inch square reads 2·00 acres.

165. The readings taken off this scale should be recorded in the area computation sheets in acres, cents and decimals of a cent. Thus—

Acre.	Cents.
1	52·6

166. The difference between any two computations on this scale should not exceed the following limits :—

1 to 25 cents	.. ..	1 cent.
26 to 50 ,,	.. ..	2 cents.
51 to 75 ,,	.. ..	3 ,,
76 to 100 ,,	.. ..	4 ,,
101 to 500 ,,	.. ..	5 ,,
Above 500 ,,	or 5 acres	1 per cent.

167. After the computations have been compared and closed, they should be entered in the final field area computation sheet and converted to square feet by multiplying the cents by 435·6.

168. The conversion of units and cents to acres and square feet will be much facilitated by the use of conversion tables—vide Appendix No. IX.

169. From the area calculation sheets for rectangular fields and the final field area computation sheets for the other fields, the rough area list should be prepared in form No. 46.

170. The area of offsets on the block boundaries should be computed with computing scale and entered in form No. 47.

171. The rough area list should be examined and compared with the traverse area of the block plus or minus the area of offsets. The comparison should be made in form No. 48. The difference between the two areas should not exceed one per cent or 436 square feet per acre.

172. The correct field areas will then be entered in the field register and the entries checked. The register should be compared with the fair map.

Recovery of cost of stones and hired labour.

173. On completion of the mapping of the town, the total demarcation charges shall be apportioned among the Government, the municipality and the owners of properties in the manner prescribed in rules 6, 7, 8 and 9 of the rules under clause 2 (*g*) of section 26 of Act VIII of 1923.

174. For the charges thus due from the municipality and owners of properties, demand notices under section 8 of the Act shall be prepared in form No. 50 by the Sub-Assistant Director and Manager and forwarded to the Collector of the district concerned with a statement, showing the total demand in accordance with rule 4 (*a*) of the rules under clause 2 (*e*) of section 26 of the Act.

A register of these total demands should be kept in form 119.

The Collector should on receipt of the notices and the statement, adjust the total amount to the credit of "Revenue Survey advances—Survey Officers" by debit to "Cost of Survey marks—Survey Officers" and intimate the fact to the officer-in-charge of the Survey Party.

175. Where, however, the municipality is situated in a district other than the one in which the temporary advance of the part stands, the Sub-Assistant, Director and Manager shall besides forwarding to the Collector concerned the demand notices and the statement of total demand as laid down in rule 174, also send two copies of the statement of total demand to the Collector of the district in which the temporary advance of the party stands, who will forward one copy of the statement to his treasury officer with instruction to adjust the amount at once in his accounts by credit to "Revenue Survey Advances—Survey Officers" and intimate the fact to the Officer-in-charge and forward the duplicate to the Collector of the district in which the municipality lies, for keeping a plus and minus memorandum in his treasury accounts.

176. The amount chargeable to Government should be drawn in a contingent bill and remitted into the treasury to the credit of the temporary advance.

Finishing.

177. The map should be completed by printing the heading and all names. The area of the block should be entered below the heading.

178. The procedure prescribed under section 9 (2), 11 and 13 of the Act and the rules framed thereunder should then be completed.

Record of measurement and fair register.

179. A record of measurement should then be prepared. For this purpose, a tracing will be made of the fair block map on bank post paper showing field boundaries, and theodolite and chain survey stations.

180. The walls of houses shown by red lines in the demarcation sketch should also be delineated in the tracing by thin black lines drawn close to, but not touching, the field boundaries. The tracing should then be inked.

181. Measurements of chain lines and offsets and of the outer boundaries of survey fields should be neatly copied from the rough block map.

182. Portions of villages included in the town survey area should be excluded from the village maps. Village maps showing this alteration should be sent to the Central Office, whence corrected maps will be issued.

183. Field numbers and measurements should be written; not typed.

184. Wherever it is not possible to enter the measurements of chain lines and offsets legibly in the body of the tracing, they should be entered in the margin. Buildings and their measurements should be omitted. The tracing must be neatly prepared for reproduction by the ferro-prussiate process.

185. Headings and side names should be printed.

186. Names of streets should not be written or typed in the body of the tracing but a list of the streets with their corresponding survey field numbers should be printed at the bottom of the tracing or in the margin as space may allow.

187. A fair area list should be prepared in form No. 52 and furnished along with the demarcation sketch and field register to the Special Officer who will then prepare in English a fair field register in duplicate and send the same to the Municipal Chairman direct, returning the other records to the officer-in-charge of the Survey Party.

188. The persons responsible for each item of mapping should sign their names in printed lists, form No. 54, which should be pasted on the back of the maps concerned.

Final examination.

189. The maps and all other records should be finally examined by a sub-assistant and his result of his examination recorded in the final examination—Report form No. 55. This report and all other records should be signed by the officer-in-charge.

190. The following is the list of records to be sent to the Central Survey Office :—

1. Index map for the town.
2. Traverse field books.
3. Treverse sheets.
4. Field demarcation sketches.
5. Rough block maps.
6. Fair block maps.
7. Inspection reports.
8. Rough and fair area lists.
9. Rough field register.*
10. Record of measurement.
11. Final examination reports.
12. Traverse skeleton plots of wards.
13. Traverse skeleton plot of the town.

Survey of streets, generally confined to Unions.

191. The town survey rules should be followed in substance.

The points of difference are explained in the rules below.

192. Only streets are to be surveyed, and only bends on the street boundry, not being the corners of masonry buildings, are to be demarcated with stones.

193. After obtaining from the Chairman of the Union a list of the streets to be surveyed and their approximate mileage, to enable an estimate of stone requirements to be made, the procedure ordered in rules 1—57 above should be followed so far as it is applicable to the survey of streets.

194. Blocks should not be formed. It will suffice if the area for survey is divided into convenient circuits, each about 250 acres for a town, or one for each nattam when the survey is in a union.

195. The nattams must be linked together either by special connecting lines or by connexion with earlier theodolite work.

196. The Chairman should be asked also to supply: —

(1) a list of encroachments recorded during the last five years permissive and objectionable ;

(2) a copy of the latest house-tax registers, and any records of previous surveys conducted under the Chairman's supervision.

197. The streets should be measured in fields, each about 400 feet long, and plotted in duplicate on the scale 160″=1 mile, not more than one field being plotted on a sheet, and all measurements being shown.

198. The encroachments shown in the Chairman's lists and all temporary structures should be surveyed with the street, but otherwise existing limits of occupation should be followed.

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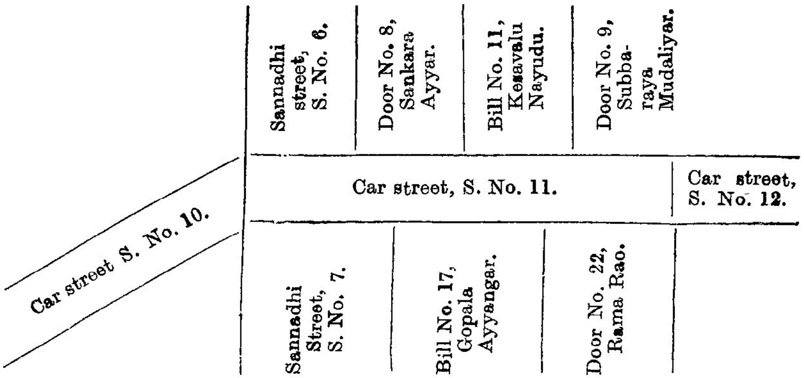
* Rough field registers are to be sent to the Collector's office for lodging—vide B.P. No. Mis. 2256, dated 29th July 1930.

Every encroachment should be inspected and thoroughly investigated by an Upper Subordinate the result of his investigation being recorded in a register (Form No. 121). Such of the encroachments as are either unobjectionable or are unsupported by any reasonable evidence should be excluded by him from the streets.

He should also examine the documents relating to all projections that tend to make the streets too narrow and should include in the streets those that are found to be real and objectionable encroachments. The measurement of the street fields should commence after the demarcation is inspected and passed.

199. The door or Municipal bill numbers as well as names of owners of properties abutting the street should be noted in the field plans as shown below :—



200. The areas of streets need not be computed.

201. About a month before survey and inspection are likely to be completed, the officer-in-charge should request the Collector to arrange for the appointment of a special officer to examine the demarcation to see that the interests of Government and of the local board have been safeguarded.

The demarcation sketches, the encroachment register and the duplicate Field Measurement Book should be handed over to the Special Officer, to enable him to discharge his duties properly.

202. The Special Officer should check the register of encroachments in form No. 121 with the lists of encroachments with the Tahsildar in the case of Panchayat Board areas and with the Collector in the case of municipalities and enter all cases of omission in the same register. He should inspect every line of demarcation between the street and private property and not merely the encroachments listed by the Survey Staff, find out whether any boundary requires alteration and detect cases of encroachments which have not been mentioned in the list received from the survey staff or the Taluk or Collector's office. For his purpose, in areas not previously surveyed, he should treat all temporary structures and all projections that tend to make the streets too narrow as encroachments. In areas already surveyed the record of the

previous survey should prove a useful guide to detect encroachments. He should thoroughly examine each case with reference to the documents, if any, in the possession of the parties and record his conclusion in Form No. 121 as to whether it constitutes an encroachment and if so whether it is objectionable or not. In other cases of encroachments and in cases where he thinks mistakes have been made at survey, he will prepare lists and illustrate sketches with the assistance of a surveyor and send them to the section officer who will arrange for a joint inspection of the localities and alter demarcation where he agrees with the Special Officer. He should also verify the registry made in the Field Measurement Book of all the lands adjoining the streets and sign every sheet of the Field Measurement Book.

203. The special officer will prefer land complaints under the Madras Survey and Boundaries Act, 1923, where he is dissatisfied with the section officer's action.

204. The union map should be prepared on the scale 40″ = 1 mile for reproduction to scale and should show all street, fields and important details that have been surveyed. The number of each field and the name of each street should be typed on the map.

205. Where the union limits are surveyed boundaries the map should contain an inset on the scale 4″ = 1 mile showing the whole union.

206. As soon as mapping is completed, the usual procedure under the Act will be followed and the survey made final.

APPENDIX.

RULES FOR THE GUIDANCE OF MUNICIPAL COUNCILS AND GOVERNMENT OFFICERS IN CARRYING OUT STREET ALIGNMENT OPERATIONS IN MUNICIPALITIES.

The laying down of street alignments should be undertaken in the course of every survey or resurvey conducted under the Madras Survey and Boundaries Act, 1923, in a municipal town.

2. Street alignment operations should be conducted under the supervision of a special officer whose rank should not be lower than that of a Deputy Tahsildar. The powers of a survey officer should be conferred on him under the Madras Survey and Boundaries Act. The special officer should *not* be employed *until* (*a*) *the municipal council has* decided in which streets a street alignment should be laid down and (*b*) the officer-in-charge of the town survey section has stated that he has ready the maps of the streets selected referred to in rule 4 infra.

The special officer will work under the technical supervision of the officer-in-charge of the town survey and under the administrative control of the Collector.

Note.—A street alignment will constitute a boundary of a survey field comprising the street vesting in the municipal council and including any private property which it is proposed to acquire for the purposes of such street. It is therefore convenient *that the special officer who assists in the operation of laying down* a street alignment should also be the survey officer who prepares the final street map.

3. The municipal council should decide which of the streets of the town are of sufficient importance to make it desirable that alignments should be laid down for them.

4. The officer-in-charge of town survey will furnish the special officer for each street in which street alignments are to be laid down with tracings showing in one view the whole street with all measurements of the street and of the F lines of adjoining survey fields which end on the street boundary. The original record of measurements will remain in the custody of the town survey officer. He will also give the special officer a copy of the land register *for the streets to be aligned and* adjoining properties.

In dealing with streets which are to be the subject of street alignment operations, the officer-in-charge of the town survey will determine the boundary as in the case of other streets, excluding all encroachments from private properties and including them in the streets but he will show in the maps supplied to the special officer all encroachments on the streets with full measurements. The encroachments should not be demarcated.

5. The special officer should perambulate the streets with the above-mentioned maps, should verify all encroachments shown therein with reference to the records available in the municipal and revenue officers, *and with reference to personal inspection and should satisfy himself* that all encroachments have been correctly brought to account. Any additional encroachments which he may detect should be shown on the maps with the measurements necessary to locate and plot them. All encroachments should be shown in colour wash for facility of reference by the committee.

6. The municipal council should appoint a committee consisting of not less than three and not more than five councillors to mark the street alignments in the abovementioned maps, which will be placed by the special officer before the committee for the purpose. The revenue divisional officer of the division in which the municipality is situated should be one of the members of the committee.

7. For the purpose of identifying the limits laid down in the preliminary survey and fixed by the maps, the committee should be accompanied and assisted by the special officer and by a deputy surveyor deputed from the town survey section.

8. The committee should determine the street alignments with reference to the following considerations :—

(1) Uniformity of breadth as far as this object can be attained without seriously sacrificing the existing width of the street.

(2) The present and future requirements of traffic.

(3) The expense involved in extensive acquisitions.

9. Steps and other structures, which stand vertically over drains, should be treated as part of a street, the alignments being made to run on the house side of such drains and structures.

10. The committee, after the determination of the street alignment should have the alignment properly demarcated and should have it, the encroachments and the assignable subdivisions on the house side of the alignment measured on the ground and plotted in the maps by the deputy surveyor, and should sign the maps after satisfying themselves that their intentions have been correctly represented therein.

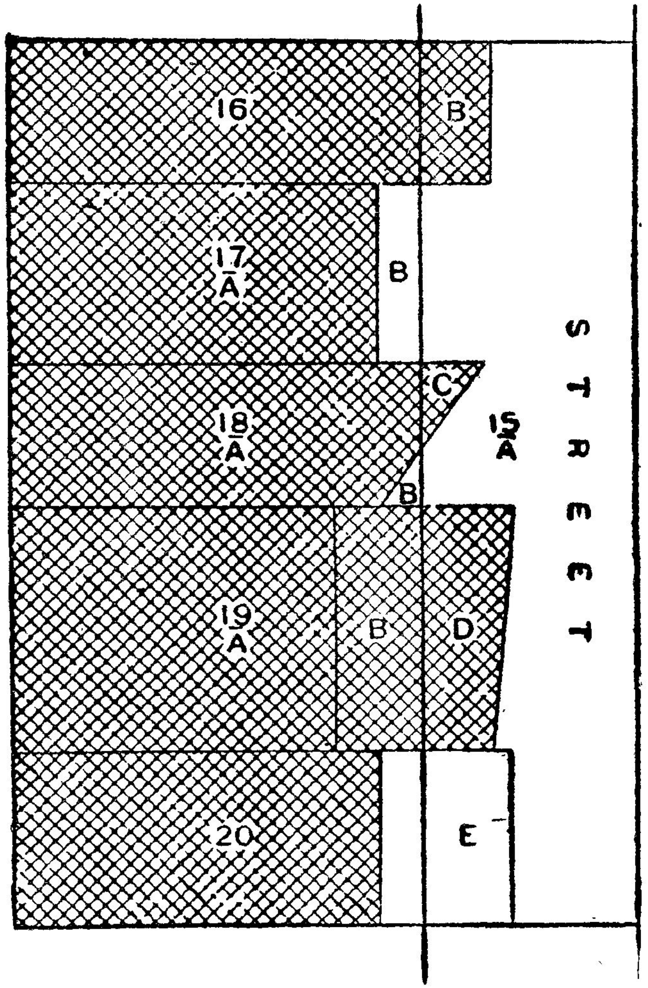
11. The committee should then publish by notice in the office of the municipal council and by beat of tom-tom in the streets considered that such maps have been prepared and are open to public inspection in the municipal office and that objections will be considered by the committee if persented within thirty days of such publication. The committee may, if they think fit, alter their street alignments with reference to any objections presented to them. In such cases, revised copies of the maps should be prepared by the deputy surveyor and signed by the committee.

12. The committee should then place the maps before the municipal council together with all objections received and their decisions thereon. The municipal council if, they accept the committee's proposals, should pass the maps and should send them to the special officer after noting on each map under the signature of the Municipal Chairman, the number and date of the resolution of the minicipal council in which it has been passed. In the event of the council's not accepting the committee's proposed street alignment in any case, the reasons for their disagreement should be embodied in the resolution and the question referred to the Collector of the district, whose decision shall be final. The number and date of any such order of the Collector should be entered on the maps under his own signature.

13. The special officer, on receipt of the maps mentioned in the foregoing rule, should satisfy himself that the subdivisions and street alignment points, as finally determined, have been properly measured on the ground offsetted on the traverse lines and plotted in the maps by the deputy surveyor.

The points where the street alignment cuts the boundaries of adjacent survey fields should be demarcated in the same manner as points where

the street boundary cuts adjacent field boundaries. Demarcation stones planted by the town survey for the demarcation of assignable frontage subdivisions should be removed and used for the demarcation of the new street boundary, i.e., the street alignment, e.g., the stones on the southern boundary of 17 B, 18 B and 19 B in the specimen map should be removed and used for the northern boundary of those subdivisions.



14. To accompany and elucidate the maps, the special officer should prepare three registers in the forms annexed to these rules—

(1) Register A (acquisition register) containing all cases of private property which fall on the street side of alignments and which have

therefore been mapped as subdivisions of the street survey fields and will necessitate acquisition under the Land Acquisition Act or under section 168 of the Madras District Municipalities Act, 1920.

(2) Register B (encroachment register) containing all cases of encroachments which fall on the street side of the alignment and which therefore have to be removed. Structures mentioned in rule 9 should not be entered in this register. These encroachments are not to be shown in the final street map and are not to be treated as subdivisions of the street field. For each encroachment a sketch with measurements should be put up in the Remarks column of register B showing its position and dimensions.

(3) Register C (assignable frontage register) containing all cases of Government land which fall on the house side of street alignments and are therefore capable of assignment, e.g., subdivision B of survey No. 17 and subdivision B of survey No. 19.

Note 1.—An encroachment will sometimes be partly on the street side and partly on the house side of an alignment. In such a case, the portion lying on the street side will appear in register B, while the portion lying on the house side will appear in register C (e.g., subdivision B of survey No. 19). In such cases cross references should be made in registers B and C.

Note 2.—Land entered in register A should be numbered and shown in the town survey records as a subdivision of the street field, while land entered in the register C should be numbered and shown as a subdivision of the survey field adjoining the street survey field.

15. When the street alignment has been finally approved by the municipal council or settled by the Collector, the special officer should prepare the notification as prescribed in the Madras Survey and Boundaries Act of 1923 in respect of the streets dealt with and should send immediately the street alignment records to the Town Survey Officer so that the street alignments may be entered in the original record of measurements. The notification and notices should not be issued until the survey officer has informed the special officer that he has ready the notification and notices for the other fields, so that they may be issued simultaneously for the whole town or any part thereof. Notices should be issued by the special officer not only to the owners of private properties abutting the streets, but also to the municipal chairman representing the municipal council in which the street is vested and to the taluk tahsildar representing the Government as the ultimate owner. The appellate authority in regard to street alignment notices is the Revenue Divisional Officer.

16. After all the formalities provided in the Survey and Boundaries Act have been gone through, including where necessary, the hearing of appeals and the correction of maps, the special officer should make corresponding entries in registers A, B and C. He should then send registers A and B to the chairman of the municipal council in order that steps may be taken for the acquisition of the land mentioned in register A and for the removal of encroachments entered in register B. He should send register C to the Revenue Divisional Officer for action in accordance with the provisions of Board's Standing Order No. 26. He should send the maps to the officer-in-charge of the town survey section.

17. If (as will often be the case) the special officer is not likely to remain in office for three or more months from the date of issue of notices, the survey records with the special officer, the original notices and the registers of acknowledgments, should be sent to the Town Survey Officer as soon as notices have been issued. The special officer should, in such

cases, deposit the registers A, B and C in the Revenue Divisional office and should state in the notices that copies of maps required by parties can be obtained from the Town Survey Officer. The Revenue Divisional Officer will communicate his appellate decisions to the Town Survey Officer who will make such alterations in the survey records and in the demarcation as are necessitated by these decisions. The Revenue Divisional Officer will at the same time get the necessary changes made in the registers A, B and C.

18. In cases in which there is reasonable doubt as to the validity of the existing survey of a town and in which it is desired to lay down street alignments in that town, the foregoing rules should be applied in their entirety.

19. In other cases of towns already surveyed, the foregoing rules should be applied, subject to the modifications that (1) the process will be carried on as a part of maintenance under the notification published in G.O. No. 3204, Revenue, dated 10th October 1917, (2) the town surveyor will take the place of the deputy surveyor mentioned in the preceding rules, (3) a spare copy of the record of measurement kept in the municipal office will take the place of the map mentioned in rule 4 above.

The special officer as soon as he has signed the final copy of the record of measurements should have the street alignments marked in the town surveyor's copy of the record of measurements and in the town surveyor's and municipal chairman's copies of the revenue maps.

Note.—Street alignment operations include the laying down of lines in streets other than those in which a municipal council has already laid down street alignments and also include the relaying of the alignment of a street for which an alignment has previously been laid.

ANNEXURE.

Register A.

Serial number.	Name of street.	Ward, block and survey number.	Subdivision number.	Area.	Remarks.

Register B.

Serial number.	Name of street.	Ward, block and survey number.	Sub-division number.	Area.	Name of encroacher.	Nature of encroachment.	Remarks.

Register C.

Serial number.	Name of street.	Ward, block and survey number.	Subdivision number.	Area.	Remarks.

DIAGRAM I.

Plan 1.

CHAPTER XIV.

BOUNDARY DISPUTES.

1. The investigation and settlement of disputed boundaries under the Madras Survey and Boundaries Act of 1923 rests with survey officers appointed as such by Government under section 4 of the Act.

2. The settlement of disputes as to water-right, easement, right of way, etc., is not within the competence of survey officers.

3. Deputy and field surveyors are not allowed to settle boundary disputes.

4. The following are the classes of cases which survey officers will have to deal with :—

(1) Disputes under section 10 (1).

(2) Appeals under section 11 from decisions under section 10 (1).

(3) Appeals under section 11 from decisions under section 9 (1).

5. Cases under class (1) will lie to the survey officer conducting the survey, those under class (2) to a survey officer senior to the officer who passed the original decision, and those under class (3) to a survey officer senior to the officer publishing the notices under section 9 (2).

6. Appeals under section 11 must be presented within three months of the communications of the decision under section 10 (2) or within three months from the date of receipt of the notice under section 9 (2), but the time taken to secure a copy of the decision and of the map shall not be included in the period of three months allowed for appeal, and the appellate authority may admit an appeal after the expiry of the said period on his being statisfied that the appellant had good and sufficient cause for not preferring the appeal within such period.

7. Original complaints and appeals including those on behalf of Government preferred to officers below the grade of Director of Survey should bear a court-fee stamp of seventy-five naye Paise and one rupee respectively.

8. Appeals preferred to the Director of Survey should bear a court-fee stamp of two rupees.

9. The Act does not allow second appeals being entertained by any survey officer.

10. Petitions and appeals regarding disputed boundaries presented to any survey officer should be forwarded to the headquarter office of the survey party where they will be registered. There will be four separate registers, two in Forms Nos. 56 and 57 for

village and field boundary disputes, and two in Forms Nos. 58 and 59 for appeals against decisions on village and field boundary disputes. These registers will be maintained separately for each taluk.

11. Unstamped or insufficiently stamped petitions or appeals will be returned to the parties for resubmission duly stamped. Petitions or appeals which do not clearly describe the locality in dispute and the nature of the dispute or which relate to more than one patta will be returned for amendment.

12. Appeals against orders passed by survey officers under section 10 (1) if not accompanied by the order appealed against, will be returned for resubmission with a certified copy of the order.

When a petition or appeal is returned under rule 11 or 12, it should be stated in the order returning it that the document should be presented again, amended or with omission supplied, as the case may be, within a specified time, failing which the petition or appeal will be liable to rejection.

One month should ordinarily be long enough to allow of the correction of initial defects, but the officers-in-charge of parties should exercise their discretion in fixing the period in each individual case.

13. When petitions or appeals have been entertained, the officer-in-charge may himself enquire into an dispose of such of them as he may consider necessary and refer the rest to any subordinate survey officer for disposal or for enquiry and report. When conplaints or appeals are so referred, they will be accompanied by extracts from the original survey records of measurement and such other papers and records as may be considered necessary for the disposal of the complaint or appeal.

14. The proceedings of the survey officer in regard to the service of summonses, the summoning of parties and witnesses and enforcing their attendance, the examination of parties and witnesses, and the production of documents will be regulated, so far as may be practicable by the sections of the Code of Civil Procedure which are printed as Appendix No. X.

15. When a complaint is entertained, the survey officer should issue a notice to the plaintiff in Form No. 60, mentioning the date and place fixed for hearing and requiring him to take out, in sufficient time before the date fixed for hearing, summonses to the defendant or defendants and to such of his witnesses as he wishes to be summoned by the survey officer. Complaints and appeals should, so far as possible be disposed of in, or in close proximity to the villages concerned. As a general rule, all complaints and appeals relating to a particular village should be taken up simultaneously at a station of which notice has been previously given to the ryots of the village concerned.

16. The notice should also require the plaintiff to deposit an amount sufficient to meet the cost of service of process, when a separate establishment is employed for that purpose and for batta to witnesses.

17. The process fee will be 50 nP. (fifty naye Paise) to a single defendant, respondent or witness in the case of original proceedings, and one rupee in the case of appellate proceedings.

18. To every additional defendant, respondent or witness residing in the same village, if the process be applied for at the same time the process fee will be twenty-five naye Paise in original proceedings and fifty naye Paise, in appellate proceedings.

19. The batta to witnesses will be such a sum of money as appears to the survey officer to be sufficient to defray the travelling and other expenses of the persons summoned in passing to and from the place of enquiry and for one day's attendance.

20. When the plaintiff has deposited the necessary fees, summons should be issued to the defendant in Form No. 61, and to witnesses in Form No. 62.

21. The summons should be in duplicate and should be signed by the survey officer.

22. The summons to the defendant should specify the time and place at which he is required to attend.

23. The summonses to witnesses should specify the time and place at which they are required to attend and also state whether their attendance is required for the purpose of giving evidence or to produce a document or for both purposes; and any particular document which the person is called on to produce should be described in the summons with reasonable accuracy.

24. The date on which the defendant and witnesses should be required to attend should be the same as that fixed in the notice issued to the plaintiff under rule 15 above. But if that date should happen to be too near for the appearance of the defendants and witnesses with reference to their place of residence and the time necessary for the service of summonses, it should be altered and the altered date communicated to the plaintiff.

25. When the defendant or witness is a Government servant, the summons should be served through the head of his office.

26. Where the parties to a complaint do not apply for summonses to the village officers, the survey officer may summon them, if necessary, and record their evidence.

27. In a dispute in which the interests of Government are concerned, and the case is not of triffling nature, the officer-in-charge should address the Tahsildar, Divisional Officer, or the Collector, in order that the interests of Government may be properly represented. In triffling cases, the village authorities will represent Government.

28. Where the dispute relates to Government lands whose control is vested in the Public Works, Local Fund, Forest or other department, the district head of that department should be similarly addressed.

29. If on receipt of a complaint, the survey officer finds that verification of the disputed locality is necessary, he may do the same on the date fixed for inquiry or at any time before that date; or he may depute one of his subordinates to inspect the grounds and prepare a measurement sketch, to any convenient scale, of the disputed locality, showing the land claimed by each party as also the adjoining lands where necessary.

30. The subordinate may also be directed to submit his report on the facts of the dispute for the information of the survey officer, but the order of the survey officer should be based on evidence recorded by himself and not upon the report of his subordinate.

31. Summonses should be served ordinarily by the village establishment or by the process peon if one has been duly sanctioned and attached to the survey officer.

32. Service of summons should be made by delivering or tendering the duplicate summons to the defendant or witness personally or to his agent.

33. The village servant or process peon should take on the back of the original summons the signature of the person to whom the duplicate is delivered.

34. If the defendant or the witness refuses to sign the acknowledgment, or if, owing to his absence or other cause, the summons cannot be served personally, the village servant or process peon should affix a copy of the summons on the outer door of the house in which the defendant or witness ordinarily resides and return the original summons to the survey officer with an endorsement thereon that he so affixed the copy and the circumstances under which he did so.

35. On the day fixed for the hearing of the case or on any other day to which the hearing is adjourned, the inquiry will begin by the palintiff stating his case and producing his evidence in support thereof.

36. The statements of parties and the evidence of witnesses should be taken on oath and should be in the language with which they are familiar.

37. As the examination of each witness proceeds, the survey officer should, when he does not take down the evidence in his own handwriting, make a memorandum of the substance of what each witness deposes, and such memorandum should be written and signed by the survey officer with his own hand and should form part of the record.

38. The defendant will then state his case which will be recorded, together with the evidence of his witnesses, as explained in the preceding two rules.

39. If on the date fixed for the hearing of the case, the plaintiff fails to appear, the survey officer will unless the defendant admits the claim, dismiss the complaint.

40. If the plaintiff appears but not the defendant, though summons was duly served on him, the survey officer will proceed to pass a decision on the evident merits of the case, with the aid of such records as are available.

41. The survey officer will in each case pass his order and record the grounds on which the order was based.

42. The proceedings of the survey officer should be recorded in Form No. 63.

43. The purport of the survey officer's order should be communicated to the parties on the day the order is passed.

44. In communicating the purport, the parties should be informed of the time within which and the person to whom an appeal may be presented, *see* Form No. 64.

45. When an appeal is preferred under section 11, from an order under section 10 (1), the appellate authority should issue a notice in duplicate, in Form No. 65 to the respondent fixing a date for the hearing of the same. Notice in duplicate, in Form No. 66, should also be sent to the appellant.

46. In the case of an appeal preferred under section 11 from an order under section 9 (1), notice in duplicate should be given to all registered holders the boundaries of whose holdings may be affected by the proceedings in appeal.

47. The survey officer shall dismiss the appeal if the appellant be absent and proceed *ex parte* if the respondent be absent.

After the parties have been heard and such evidence as may be necessary has been recorded, the appellate authority will pass his decision and record the grounds on which it is based.

48. All decisions should be communicated the day they are passed and should be accompanied by a printed acknowledgment.

49. A copy of the order of the survey officer or of the decision of the appellate authority may be furnished to the parties on their application and at their cost. Where from its wording, the interpretation of the order of the survey officer is made to depend upon a plan, sketch or diagram, a copy of such plan, sketch or diagram should be supplied free of cost with the copy of the order; but, where copies of plans, sketches or diagrams are required merely to supplement and not to explain the order, they should be supplied after deposit of the required fee by the party applying for the copy. The usual fee for the copy of the plan of a field shall be one rupee but for special cases special fees may be fixed by the officer passing

the orders. In all cases to which Government is a party, copies of the order and of any necessary plans, sketches or diagrams should be sent to the Collector without application on his part.

50. The order of the survey officer or the decision of the appellate authority should be given effect to as soon as possible after the order or decision has been passed, and a certificate to that effect should be made in the records connected with the case, noting the date on which the order or decision was given effect to.

51. Copies of depositions and of documents filed in the course of the hearing of a dispute and of the memoranda of evidence made by the survey officer or the appellate authority may be granted to parties, whenever required and at their cost. Parties may also be allowed to inspect such documentary evidence as is filed. On completion of hearing and after an order or decision has been passed all documents filed should be returned to the parties filing them, and the fact that this procedure will be adopted should be intimated to the parties as an addendum to the order or decision passed in the case.

52. The District Collector, or Survey Officer, may, with the consent of all the parties concerned, refer to arbitration any dispute as to a boundary.

53. The decision of the district collector or the survey officer passed in accordance with such award, shall be conclusive between the parties to such arbitration and those claiming under them.

54. Any survey officer generally or specially authorized in that behalf, or the district collector, or any officer to whom an appeal is preferred under any of the provisions of this Act, may, for the purposes of any survey inquiry or other proceeding under this Act, summon and enforce the attendance of any person for giving evidence and for the production of documents, or for the purpose rendering assistance in the survey of any land in which such person has an interest.

55. The procedure described in the Code of Civil Procedure for summoning and enforcing the attendance of witnesses and for the recording of evidence shall be followed as far as it can be made applicable.

56. Original records connected with each dispute decided under the Act should be sent to the Central Survey Office on the completion of survey of each taluk or estate. The records should be accompanied by a list in Form No. 67.

57. In re-surveys, the original survey records will form part of the documentary evidence for the survey officer to base his order or decision. Such records cannot, however, prevail against the prescriptive right acquired by a party by twelve years' adverse possession in the case of patta or inam lands, and sixty years' adverse possession in the case of Government waste or poramboke lands

APPENDIX I.

THE MADRAS SURVEY AND BOUNDARIES ACT, 1923.

ACT NO. VIII OF 1923.

An Act to amend the law relating to survey of lands and settlement of boundary disputes.

WHEREAS it is expedient to consolidate and amend the law relating to survey of lands and settlement of boundary disputes *and whereas the previous sanction of the Governor-General has been obtained under section 80-A* (3) *of the Government of India Act* ; It is hereby enacted as follows :— Preamble.

CHAPTER I.

Preliminary.

1. (1) This Act may be called "the Madras Survey and Boundaries Act, 1923." Title.

(2) It extends to the whole of the Presidency of Madras. Local extent

2. The Madras Survey and Boundaries Act, 1897, is hereby repealed. Repeal.

3. In this Act, unless there is something repugnant in the subject or context,— Interpretation clause.

(i) "Estate" means— "Estate."

(*a*) any permanently-settled estate whether a *zamindari, jaghir, mitta* or *palaiyam* ;

(*b*) any portion of such permanently-settled estate which has been separately registered in the office of the Collector ;

(*c*) any unsettled *palaiyam* or *jaghir* ;

(*d*) any inam village of which the grant was made or has been confirmed by the British Government ;

(*e*) any portion, consisting of one or more villages of any of the estates specified above in clauses (*a*), (*b*) and (*c*), which is held on a permanent undertenure.

(ii) "Government land" means any land not forming an estate or any portion thereof. "Government land".

(iii) "Prescribe" means prescribe by rules framed under this Act. "Prescribe"

(iv) "Proprietor" means any person in whose name any estate is for the time being registered in the office of the Collector of the district wherein the estate is situated, and, in respect of an estate specified in clause (*e*) of sub-section (i), the holder thereof. "Proprietor."

(v) "The registered holder" of any Government land means the person in whose name the land in question is registered in the Government accounts of the village : "Registered holder."

Provided that when any person other than the registered holder is in lawful management of Government land otherwise than as agent or servant of the registered holder or as mortgagee or lessee, such person shall be deemed to be the registered holder in respect of such Government land.

"Proprietor or registered holder in case of joint registration.

(vi) Where an estate or Government land is so registered in the names of two or more persons jointly, the proprietor or registered holder, as the case may be, shall, for the purpose of this Act, be the persons who is recognized by the other joint holders as the manager of the estate or who, in case of dispute, is recognized by the Collector as senior joint holder.

"Survey."

(vii) "Survey" includes all operations incidental to the determination, measurement and record of a boundary or boundaries or any part of a boundary and includes are-survey.

"Survey mark."

(viii) "Survey mark" means any mark or object erected, made, employed or specified by a survey officer to indicate or determine or assist in determining the position or level of any point or points.

"Survey officer."

(ix) "Survey officer" means any person appointed to be a survey officer under section 4.

Local Government to appoint survey officers.

4. (1) The Local Government may by notification appoint any person either by name or by virtue of his office to be a survey officer for all or any of the purposes of this Act.

Local Government to prescribe jurisdication of survey officer.

(2) Subject to the control of the Local Government and of any officer or authority appointed by it in this behalf every person so appointed shall exercise and perform the powers and duties of a survey officer within such local limits, and for such periods of time as the Local Government may direct.

Local Government may delegate powers of control.

(3) The Local Government may delegate its powers under sub-sections (1) and (2) to such officer or authority as it thinks fit.

CHAPTER II.

The survey of Government lands.

Local Government may direct the survey of Government land or of any boundary of such land.

5. The Local Government or, subject to the control of the Local Government, any officer or authority to whom this power may be delegated by it may by notification order a survey of any Government land or of any boundary of such land or of the boundary forming the common limit of Government land and land that is not Government land.

Notification to be published by survey officers.

6. (1) When any survey is ordered under section 5 the survey officer shall publish a notification in the prescribed manner inviting all persons having any interest in the land or in the boundaries of which the survey has been ordered, to attend either in person or by agent at a specified place and time and from time to time the after when called upon for the purpose of pointing out boundaries and supplying information in connexion therewith.

Such notification to be valid notice to persons interested.

(2) A notification published under sub-section (1) shall be held to be a valid notice to every person having any interset in the land or in the boundaries of which the survey has been ordered.

7. The survey officer shall carry out the survey in the prescribed manner.

Survey officer to carry out the survey in the prescribed manner.

8. (i) The cost, if any, of the labour employed and of the survey marks used in any survey notified under section 5 shall be determined and apportioned in the prescribed manner among the persons who have any interest in the land or in the boundaries of which the survey has been ordered and shall be recoverable from such persons as an arrear of land revenue. Notice of such determination and apportionment shall be given in the prescribed manner to the persons aforesaid.

Costs to be charged to persons interested in the lands surveyed.

9. (1) The survey officer shall have power to determine and record as undisputed any boundary in respect of which no dispute is brought to his notice.

Power of survey officer to determine and record and undisputed boundary.

(2) Notice of every decision of the survey officer under section 9 (1) shall be given in the prescribed manner to the registered holders of the lands the boundaries of which may be affected by the decision.

Notice to registered holders of lands affected.

10. (1) Where a boundary is disputed, the survey officer, after making such inquiry as he considers necessary, shall determine the boundary and record it in accordance with his decision. The survey officer shall record in writing the reasons for his decision.

Power of survey officer to determine and record a disputed boundary.

(2) Notice of every decision of the survey officer under section 10 (1) shall be given in the prescribed manner to the parties to the dispute and other registered holders of the lands the boundaries of which may be affected by the decision.

Notice to parties to the dispute and to registered holders of land affected

11. (1) Any person affected by a decision under section 9 or 10 may appeal to the prescribed officer. The decision of the appellate authority with reasons therefor shall be recorded in writing and notice of such decision shall be given in the prescribed manner to the parties to the appeal. Any modification of the survey officer's decision, ordered by the appellate authority, shall be noted in the record prepared under section. 9 or 10, as the case may be.

Appeals against orders under section 8, 9 or 10.

(2) A copy of the order under section 10 or 11 (1) and a copy of the order regarding the boundaries as determined under section 9, 10 or 11 (1) shall be furnished to any person interested in such orders, as the case may be, on his application and at his cost.

12. (*a*) An appeal under section 11 shall be preferred within three months from the date of service of notice under section 9 or 10, provided that the time taken to obtain a copy of the decision and of the map shall not be included in the period of three months allowed for appeal.

Period within which appeal should be preferred.

(*b*) No appeal preferred after the expiry of the said period shall be admitted, provided that the appellate authority may admit an appeal after the expiry of the said

Proviso

period on his being satisfied that the appellant had good and sufficient cause for not preferring the appeal within such period.

Explanation.—The fact that notice under section 9 or 10 was not served personally on the appellant shall be deemed to be good and sufficient cause within the meaning of the above proviso.

(*c*) No appeal shall be admitted under sub-section (*b*) after the issue of the notification specified in section 13.

Completion of demarcation to be notified.

13. When the survey of any land or boundary which has been notified under section 5 has been completed in accordance with the orders passed under section 9, 10 or 11, the survey officer shall notify the fact in the District Gazette and a copy of such notification shall be posted in the village chavadi, if any, of the village to which the survey relates; unless the survey so notified is modified by a decree of a civil court under the provisions of section 14, the record of the survey shall be conclusive proof that the boundaries determined and recorded therein have been correctly determined and recorded.

Institution of a suit in civil court within three years to establish rights claimed in respect of the boundary of the property surveyed.

14. Any person deeming himself aggrieved by the determination of any boundary under section 9, 10 or 11 may, subject to the provisions of Parts II and III of the Indian Limitation IX of 1908 Act, 1908, institute a suit within three years from the date ofthe notification under section 13 to set aside or modifiy the said determination and the survey shall, if necessary, be altered in accordance with the final decree in the suit and the alteration, if any, shall be noted in the record. IX of 1908.

The plaintiff in such suit shall join as parties to it all persons whom he has reason to believe to be interested in the boundary which is the subject of the suit.

Registered holders responsible for the maintenance of survey marks.

15. (1) Subject to such conditions as may be prescribed in this behalf, every registered holder of Government land shall be bound to maintain, renew and repair the survey marks on or within the boundaries of his holding, and in default of his doing so the survey officer or the Collector may, at the cost of the Local Government, maintain, renew and repair such survey marks, determine and apportion the cost of so doing and recover such cost as an arrear of land revenue. Such cost may include the cost of all operations incidental to such renewal or repair but not any charges on account of survey officers and supervising establishment.

Notice to the registered holder.

(2) Before a survey officer or Collector maintains, renews or repairs any survey marks, he shall serve a notice in writing on the registered holder in the prescribed manner giving the particulars of the survey marks in respect of which default has been committed and calling upon him to maintain, renew or repair the same within a time to be specified in such notice which shall be not less than fifteen days from the date of service thereof.

Notice to cultivator or other person interested.

(3) If the notice under sub-clause (2) cannot be served personally on the registered holder, a copy of the same shall be served also on the cultivator or other person interested in the land.

16. It shall be the duty of every village headman and of every village accountant— Duties of village officers.

(*a*) to prevent the destruction, injury, removal or alteration of any survey mark on or within the limits of his jurisdiction ; and

(*b*) when he becomes aware that any such mark has been destroyed, injured, removed or altered, to report the fact to the prescribed officer.

CHAPTER III.

The survey of estates.

17. The local Government, or subject to the control of the Local Government, any officer or authority to whom this power may be delegated by it, may by notification direct the survey of any estate or portion of an estate or of any boundary therein. Local Government may direct the survey of an estate in certain cases.

(*a*) on the application in writing of the proprietor of such estate or, in the case of a boundary, of any person interested therein ; or

(*b*) without such application whenever in the opinion of the Local Government such survey is necessary.

(i) for the better or more convenient assessment or levy of irrigation cess ;

(ii) for any other reason to be recorded prior to the issue of such notification ;

Provided (1) that any person making an application under clause (*a*) shall forward with his application a statement in writing signed by him to the effect that he will pay the whole cost of the survey and if required will deposit the amount in a Government treasury before the survey is commenced and (2) that any survey commenced under that clause may be stopped on the withdrawal of his application by the applicant unless the Local Government sees reason to direct the continuance of the survey in virtue of the power conferred on it by caluse (*b*).

18. Except as provided in sections 19 and 20 the conduct such survey and the proceedings of the survey officer shall, as far as may be, be regulated by the procedure laid down in Chapter II with regard to the survey of Government lands ; and the provisions contained in that chapter in regard to appeals from the orders of a survey officer, the granting of copies thereof and the effect of such orders, and of the decisions passed in appeals therefrom and in regard to the right of suit in respect of such orders and decisions shall, as far as may be, apply to all orders passed by a survey officer under this chapter and to the decisions passed in appeals against such orders Procedure to be observed during survey.

19. All costs incurred by the Local Government on account of a survey directed under caluse (*a*) of section 17 shall be recoverable from the persons who have any interest in the estate, portion of estate, or boundary of which the survey has been ordered as an arrear of land revenue ; the cost of a survey directed under clause (*b*) (i) and (ii) of section 17 shall Cost of survey recoverable from proprietor.

be borne by the Local Government unless otherwise provided by any law for the time being in force.

Local Government may direct apportionment of costs among lands surveyed.

20. (1) On the application of the proprietor of an estate in which any survey has been made the Local Government or any officer, or authority to whom this power may be delegated by it, may direct the survey officer to apportion among the holders of the lands orpersons interested in the boundaries which have been surveyed the whole or a specified portion of the cost of such survey ; provided that no tenant under a proprietor shall be called upon to pay a larger sum on account of such survey than he would be liable to pay if he held his land directly under the Government.

Apportionment how made.

(2) The apportionment under sub-section (1) shall be made in the prescribed manner.

Cost so apportioned recoverable by proprietor from tenants.

(3) The amount apportioned under this section when it is due by the tenants of a proprietor shall be recoverable as if it were an arrear of re nt due by a tenant to his landholder.

(4) For the purpose of this section and section 21 the expression " tenant " shall include the holder of a rent-free grant.

Consequence ensuing on completion of survey of an estate.

21. When an estate or a portion of an estate or a boundary in an estate has been surveyed in pursuance of a notification issued under section 17, the survey officer shall report the completion of the survey to the District Collector and to the proprietor, and the following consequences shall thereupon ensue :

Duty of tenants.

(i) Subject to such conditions as may be prescribed in this behalf, every tenant of the land surveyed, and where there is no tenant, the proprietor. shall be bound to maintain, renew and repair the survey marks on or within the boundaries of his holding, and *in default of his doing so the Collector may*, after giving notice to the tenant or proprietor, as the case may be in the manner provided in sub-sections (2) and (3) of section 15, at the cost of the Local Government, maintain, renew and repair such survey marks and recover the cost of so doing as an arrear of land revenue. Such cost may include the cost of all operations incidental to such renewal or repair but not any charges on account of survey officers and supervising establishment.

Duties of village officers.

(ii) It shall be the duty of the headman and of the accountant of every village the whole or a part of which has been surveyed

(*a*) to prevent the destruction, injury, removal or alteration of any survey mark on or within the limits of his village ; and

(*b*) when he becomes aware that any such mark has been destroyed, injured, removed or altered, to report the fact to the proprietor of the estate and to the Collector or to such officer subordinate to the Collector as the District Collector may, from time to time, direct.

CHAPTER IV.

Miscellaneous.

22. For the purposes of any survey, inquiry or other proceeding under this Act, the survey officer or the District Collector or any of the subordinates of such officers shall have power to enter upon, examine and measure any land under survey and to clear by cutting down or removing any trees, jungle, fences, standing crops or other material obstructions, the boundaries or other lines the clearance of which may be necessary for the purposes of the survey. Power to enter upon, examine and clear obstruction on lands.

23. Any survey officer generally or specially authorized in that behalf, or the District Collector or any officer to whom an appeal is preferred under any of the provisions of this Act, may, for the purpose of rendering assistance in the survey of any land summon and enforce the attendance of any person who has an interest therein and may for the purposes of any survey enquiry or other proceedings under this Act summon and enforce the attendance of any person for giving evidence and for the production of documents ; and the procedure prescribed in the Code of Civil Procedure for summoning and enforcing the attendance of witnesses and for the recording of evidence shall be followed as far as it can be made applicable. Power to summon witnesses and require production of document.

24. (1) The District Collector or the survey officer may, with the consent of all the parties concerned, refer to arbitration any dispute as to a boundary. Reference to arbitration.

(2) The decision of the District Collector or the survey officer passed in accordance with such award shall be conclusive between the parties to such arbitration and those claiming under them.

25. (i) In the absence of a contract to the contrary a proprietor or registered holder of any estate or Government land under survey, who incurs any expenses or from whom any expenses are recovered under this Act in respect of such survey, shall, if he be not the owner thereof, acquire a charge on such estate or Government land to the extent of the expenses so incurred or recovered from him with interest thereon at the rate of 9 per cent per annum. Proprietor or registered holder may recover expenses paid by him from the owner of the estate or Government land and may acquire a charge upon the land to that extent.

(ii) It shall be lawful for any person claiming an interest in an estate or Government land under survey to pay the charges payable under this Act in respect of the survey of such estate or Government land, though he be not the proprietor or registered holder thereof ; and all such sums, if paid by a tenant or lessee, may be deducted from any rent then or afterwards due by him in respect of such estate or Government land and if paid by any other person interested or *bona fide* claiming an interest in the estate or Government land, shall be a charge upon such estate or Government land. Such sums shall bear interest at 9 per cent per annum. Person claiming an interest may pay charges payable by proprietor or registered holder and acquire a charge.

Extent of such charge.

(iii) Where a person entitled under this section to a charge on an estate or Government land is a co-owner of such estate or Government land such charge shall extend only to so much of the amount recovered from or expended or paid by him as is due in respect of the share of the other co-owners in such estate or Government land with interest at the rate aforesaid.

Local Government may make rules under the Act.

26. (1) The Local Government may after previous publication make rules to carry out the purposes of the Act.

(2) In particular and without prejudice to the generality of the foregoing power such rules may—

(*a*) prescribe for different localities the unit of survey, the subdivisions thereof and the description of the survey marks; and provide for maintenance, renewal and repair of such marks;

(*b*) provide for the collection and record of any information in respect of any land which has been or is about to be surveyed;

(*c*) define the classes of officers to be appointed to do duty under this Act and the powers to be exercised by such officers;

(*d*) prescribe and regulate the procedure to be followed by those officers in the conduct of proceedings under this Act;

(*e*) provide for the publication of all notifications issued under this Act and for the form, issue and service of all orders, communications and notices to be issued, communicated, given or served under this Act;

(*f*) regulate the furnishing of survey marks, labour and other matters necessary to surveys notified under this Act and the recovery of charges incidental thereto where they are recoverable;

(*g*) provide for the apportionment of all charges directed to be apportioned by this Act and for the determination of the cost of labour employed and of the survey marks used in any such survey;

(*h*) prescribe the fees payable for processes issued and copies granted under this Act; and

(*i*) prescribe the manner in which arbitrations are to be appointed and regulate the procedure to be followed by them.

(3) All such rules shall be laid before the Legislative Council for a period of not less than two months while the Council is in session.

Immunity for acts done in good faith or purporting to be so done.

27. No suit or other legal proceedings shall lie against any person for anything in good faith done or purporting to be done under this Act.

APPENDIX I-A.

THE MADRAS SURVEY AND BOUNDARIES ACT, 1923 (VALIDATION) ACT, 1924.

ACT No. II OF 1925.

An Act to remove all doubts as to the validity of the Madras Survey and Boundaries Act, 1923.

Mad. VIII of 1923. WHEREAS it appears that the Madras Survey and Boundaries Act, 1923, as assented to by the Governor on the 21st day of February 1923, and by the Governor-General on the 12th day of March 1923 and as published in the *Fort St. George Gazette* on the 29th day of May 1923 contained the words "order regarding" in sub-section (2) of section 11 of the said Act instead of the words "map recording" which occurred in the said sub-section as passed by the Local Legislative Council; Preamble

AND WHEREAS doubts have arisen as to the validity of the said Act and of things done under the same;

AND WHEREAS it is expedient to remove all such doubts; it is hereby enacted as follows:—

1. This Act may be called the Madras Survey and Boundaries Act, 1923 (Validation) Act, 1924. Short title.

Mad. VIII of 1923. 2. In this Act, "The Madras Survey and Boundaries Act, 1923," shall mean what was published under that title at pages 121 to 126 in Part IV of the *Fort St. George Gazette*, dated the 29th day of May 1923. Principal Act.

Mad. VIII of 1923. 3. The provisions contained in the Madras Survey and Boundaries Act, 1923, are hereby enacted with the substitution of the words, "A copy of the order and a copy of the map recording the boundaries as determined under section 9, 10 or 11 (1) shall be furnished to any person interested in such order or map" for the words "A copy of the order under section 10 or 11 (1) and a copy of the order regarding the boundaries as determined under section 9, 10 or 11 (1) shall be furnished to any person interested in such orders" occurring in sub-section (2) of section 11 of the Madras Survey and Boundaries Act, 1923. Amendment of section 11 of the Principal Act.

And the said provisions with the said substitution shall be deemed to have been in force with effect from the 29th day of May 1923.

APPENDIX I-B.

RULES FRAMED UNDER SECTION 26 OF THE MADRAS SURVEY AND BOUNDARIES ACT, VIII OF 1923.

Rules under clause 1.

1. In the case of an estate surveyed under section 17 (*a*) of the Act the Board of Revenue may require that the estimated cost of the Survey shall be deposited in the district treasury either in whole or in part before survey is begun or from time to time thereafter.

2. If default is made in the payment of any advance, the survey shall be stopped after three months' notice to the proprietor.

Rules under clause 2 (*a*)*

* (Applicable to both Government and Estate lands.)

1. Survey marks shall be of the following descriptions and shall be set up at the points indicated—

(1) (*a*) Theodolite stones (cadastral surveys)—

Descriptions.—Stones of durable quality roughly squared of approximate dimensions measuring 3′ by 9″ by 9″ with a plummet hole cut on the top and a broad arrow on one side.

At village trijunctions and their pointers on the boundaries between ryotwari villages and at the places marked on the village map or other record prepared at the time of survey as stations at which a theodolite has been set up on the boundaries between a ryotwari village and a proprietary village.

(*b*) Theodolite stones (Town surveys)—

Description.—Stones of durable quality roughly squared of approximate dimensions measuring 3′ by 9″ by 9″ or 18″ by 8″ by 8″ with a plummet hole and a broad arrow cut on the top.

N.B.—Stones of the larger size shall be used for making the boundaries of the municipality and of open blocks. The smaller sized stones shall be used in streets.

Points.—At the places where three or more streets or roads meet and at important bends on the block boundaries, marked in the Revenue map or other record prepared at the time of survey as stations at which a theodolite has been set up.

(2) Chain survey stones—

Description.—Stones of durable quality roughly squared of approximate dimensions measuring 1′ by 6″ by 6″ with a St. George's cross on the top and arrow mark on the side.

Points.—In town surveys at points on the straight lines between two theodolite stations.

(3) Field stones—

Description.—Stones of durable quality roughly squared of approximate dimensions measuring 2′ by 6″ by 6″ with a broad arrow cut on one side.

Points.—Areas surveyed on the system of simple triangulation or on the town survey system. At the bends and trijunctions on the boundaries of all survey fields, poramboke subdivisions and subdivisions belonging to or vested in local bodies.

All other cases—(i) (*a*) At the places marked on the village map or other record prepared at the time of survey as staions at which a theodolite has been set up with the exception of the points mentioned in sub-clause (*a*) of clause (1);

(*b*) at the bends and trijunctions on the boundaries of villages adjoining proprietary estates, at trijunctions on the boundaries between ryotwari villages and at the bends and trijunctions of poramboke survey fields and subdivisions, of survey fields and subdivisions belonging to or vested in local bodies, as also of minor circuits, i.e., survey fields which have been surveyed with an angular instrument.

(ii) At the trijunctions of other survey fields.

(iii) At the ends of G lines which do not coincide with field trijunctions or theodolite stations.

Note.—When two porambokes whether whole fields or subdivisions belonging to Government adjoin each other, the bends on the common boundary need not be demarcated with stones, except where the bends are in the boundary of a field surveyed on the system of simple triangulation.

Exceptions—

(i) In Estate surveys the letter E or Z or any other distinguishing mark (other than a broad arrow) as may be decided upon by the Survey Officer in consultation with the proprietor may be used.

(ii) To suit special local conditions or requirements, the Local Government may by special order—

(1) vary the size and description of stones, or

(2) direct the demarcation with stones of all bends on field boundaries.

2. In addition to the symbols prescribed in rule 1, symbols as described below, may, if so directed by the Director of Survey, be cut on the stones below specified :—

(1) On a theodolite stone at a village trijunction station, a triangle enclosing the plummet hole.

(2) On a theodolite stone at any other point on a village boundary, two parallel lines, one on each side of the plummet hole.

(3) On a field stone on the boundary of minor circuit, on a theodolite station other than a village trijunction and its pointers in the case of boundaries between ryotwari villages and at a khandum station, a plummet hole on the top.

(4) On a field stone on the boundary of a subdivision, the letter "S" on the top.

(5) On a field stone at the trijunction of blocks, a triangle on the top.

(6) On a field stone on the boundary of a village a St. George's cross on the top.

3. Survey marks which have been planted under proper authority before the issue of the rules shall be deemed to be of the prescribed description.

4. A stone shall be deemed to require repair when it is—

(*a*) out of its correct position, or

(*b*) entirely covered with earth or overgrown with vegetation so as to be invisible or inaccessible for purposes of measurement.

5. (1) The cost of renewing missing stone under sections 15 and 21 shall comprises the following items :—

(i) The actual cost at the depot of a stone of the required size, description shall be calculated by the Collector from time to time according

to contractor's terms and local conditions at a uniform rate for villages similarly circumstanced.

(ii) The actual cost of hired labour.

(2) The cost of repairing a stone under the same sections shall be the actual cost of hired labour.

6. The cost incurred for the renewal or repair of a stone in accordance with the preceding rule shall, in the case of Government lands, be apportioned in equal proportions among the registered holders of all adjacent fields touching it ; in the case of estates, it shall be apportioned in equal proportions among the tenants of all adjacent fields touching it and where there is no tenant, it shall be collected from the proprietor.

In the case of a stone touching Government lands and estate lands (both cadastrally surveyed) the cost shall be apportioned in equal proportions among the registered holders and tenants of all adjacent lands touching the stone, and where there is no tenant, among the registered holders and the proprietor or proprietors concerned. In all cases, the cost may be recovered as an arrear of land revenue.

7. The report which village headman or village accountant is required to make under section 16 shall be made to the revenue inspector in the form of an entry in an inspection register to be submitted periodically to the revenue inspector or other survey officer empowered in this behalf.

Rules under clause 2 (*b*).

1. When the survey officer has published a notification under section 6 (1), or in the case of an estate under section 6 (1) read with section 18 in respect of any land or boundaries about to be surveyed, such officer, or any subordinate of such officer not below the grade of field surveyor, may, by written notice, call upon any person claiming to be interested in such land.

(*a*) to attend either in person or by agent at a specified place and time and from time to time thereafter, in order to point out boundaries and supply information in connexion therewith ;

(*b*) to produce before such officer or subordinate for inspection and registry all grants, title-deeds and other documents relevant, in his opinion, to the survey.

2. The survey officer or the said subordinate of such survey officer may, by written notice, call upon the village officers to produce the village records and also to attend during the survey whenever necessary.

3. For the cadastral survey of every village, estate, or other defined local area, the following records shall be prepared by the survey officer before the completion of the survey of such area is notified under section 13, or, in the case of an estate, under section 13 read with section 18 of the Act :—

(1) Field register showing the number and area of each survey field and subdivision and, as far as ascertainable, the tenure and ownership of the same.

(2) Record of measurement or field measurement book plotted to scale and showing the measurements taken for each field and subdivision.

(3) Map plotted to scale showing all survey fields with important topographical details.

Rules under clause 2 (*c*).

Survey officers appointed under section 4 (1) of the Act shall each exercise the powers specified in the following schedule :—

Section of the Act under which powers are given.	*Brief description of powers conferred.*
	Class of survey officers empowered—Assistant Directors of Survey, Sub-Assistant Directors of Survey, Revenue Divisional Officers, Tahsildars, and Deputy Tahsildars in independent charge and the Executive authorities of municipalities.
11	To hear appeals from orders under sections 8, 9 (1) and 10 (1) passed by officers subordinate to them.
	Class of survey officers empowered—Assistant Directors of Survey, Sub-Assistant Directors of Survey and head surveyors.
6(1)	To publish notification of commencement of survey.
8	To determine the cost of survey marks and labour.
9 (1)	To determine undisputed boundaries.
10(1)	To enquire into and determine disputed boundaries.
13	To notify completion of survey.
16 (*b*)	To receive reports of the destruction, injury, removal or alteration of survey marks.
23	To summon witnesses and require production of documents.
	Class of survey officers empowered—Assistant Directors of Survey.
20 (1)	To apportion cost of survey.
24	To refer to arbitration.
	Class of survey officers empowered—Tahsildars, Deputy Tahsildars, Revenue Inspectors, District Deputy Surveyors and Town and Union Surveyors.
6 (1)	To publish notification of commencement of survey.
8	To determine and apportion cost of survey marks and labour.
9 (1)	To determine undisputed boundaries.
10 (1)	To enquire into and determine disputed boundaries.
13	To notify completion of survey.
15	To maintain, renew and repair survey marks and apportion the cost thereof.
15 (2)	To issue notices to registered holders regarding renewal or repair of survey marks.
16 (*b*)	To receive reports of the destruction, injury, removal or alteration of survey marks.
23	To summon witnesses and require production of documents.
	Class of survey officers empowered—Revenue Divisional Officers.
24	To refer to arbitration.

NOTE.—The Director of Survey is empowered to exercise all or any of the powers conferred on his subordinate officers in the foregoing schedule.

Rules under clause 2 (*d*).

The proceedings of all officers authorized to conduct proceedings under section 23 of the Act, shall be summary, but shall be governed ' so far as may be practicable', by the following provisions in the first schedule of the Civil Procedure Code :—

(*a*) As to the service of summonses—Order V, rules 9 to 12, 15 to 21 and 23 to 30.

(*b*) As to summoning parties and witnesses and enforcing their attendance—Order V, rules 1, 3, 4 and 6 ; Order IX, rules 1, 3, 4 and 6 to 14 ; Order XVI, rules 1 to 5 and 7 to 21 and Order XLI, rules 12 (2), 14, 15, 17, 19 and 21.

(*c*) As to the hearing and the examination of parties and witnesses—Order XVIII, rules 1, 2, 4, 6, 8 to 12, 15 (1) and 16 to 18 ; Order XXVI, rules 1 to 3 and Order XLI, rule 16.

(*d*) As to the production of documents—Order V, rule 7 ; Order XI, rules 12 to 15 and 17 to 21 ; Order XII, rule 2 ; Order XIII, rules 1 to 11 and Order XVI, rule 6 :

Provided that—

(1) The power of imposing fine under Order XVI, rules 12 and 17 shall not be exercised by any officer below the grade of Assistant Director in the Survey Department or of Deputy or Assistant Collector in the Revenue Department.

(2) The amount of fine shall, in no case, exceed fifty rupess.

Rules under clause 2 (*e*).

1. All notifications under sections 4 (1), 5 and 17 of the Act shall be published in the *Fort St. George Gazette* and in the official gazettes of the districts affected by the notifications.

2. The notifications under section 6 (1), or in the case of an estate under this section read with section 18, shall in cases where the survey relates to one or more villages, be published in two successive issues of the village sheets of the official gazettes of the district concerned and shall be affixed to the village chavadi or where there is no chavadi, in some other conspicuous place in the village.

Where the survey relates to part only of a village, the notification shall contain particulars of the fields to be surveyed and publication in the village chavadi shall be sufficient.

In both cases the fact of such publication shall be announced by beat of tom-tom in the village.

3. Where any person other than the owner is registered as proprietor of an estate or of a portion of an estate under the Madras Limited Proprietors Act, 1911, all communications and notices to be made or given under sections 9 (2), 10(2), 11 (1) and 15 (2), read with section 18, to the proprietor of such estate or portion of an estate shall be made or given to the owner as well as to the person registered as limited proprietor of such estate or portion of an estate.

4. (*a*) In the case of town surveys, the Sub-Assistant Director of Survey shall prepare in duplicate a demand notice under section 8 showing the fields held by each person concerned and the charges recoverable for the survey thereof and forward it to the Collector who shall cause a copy to be posted in the Municipal Office and send the other copy to the Tahsildar of the taluk for service on the registered holder or other person interested in the fields. Acknowledgments in token of the receipts of the notice which shall be signed and dated shall be obtained by the Tahsildar of the taluk in the book maintained for the purpose.

NOTE.—In respect of estate lands in the town no such notice need be given, as the cost will be included in the survey charges to be borne by Government and the Municipality.

(*b*) In the case of other cadastral surveys in ryotwari areas, the Tahsildar shall prepare in duplicate a demand notice under section 8 showing the fields held by each person concerned according to the latest village accounts and the charges recoverable for the survey thereof and forward it to the village headman who shall post a copy in the village chavadi and leave the other copy with the registered holder or other person interested in the fields. Acknowledgments in token of the receipt of the notice, which shall be signed and dated, shall be obtained by the village headman in a book maintained for the purpose.

5. The notices issued under section 9 (2) shall, except in the case of street surveys and boundary surveys, be in the form of an extract from the field register relating to the holding, shall state the time within which and the officer to whom an appeal may be presented, and shall be accompanied by a printed form of acknowledgment which shall be signed and dated in token of the receipt of the notice and returned to the officer who issued it.

6. The communications required by sections 10 (2) and 11 (1) shall give the purport of the decisions passed and those required by the former section shall state the time within which and the officer to whom an appeal may be presented. Acknowledgments which shall be signed and dated in token of receipt of the communications shall be obtained at the time of the communication, if the parties concerned are present, otherwise, through the post by sending them registered.

7. Where an appeal is filed against a decision under section 9(1) notice shall be given by the appellate authority to all the registered holders, the boundaries of whose holdings may be affected by the proceedings in appeal In the case of an appeal against a decision under section 10 (1), notice shall similarly be given to the other parties to the dispute.

8. The notices prescribed in section 15 (2) shall specify the numbers of the survey fields or subdivisions on or within the boundaries of which the survey marks requiring renewal or repair are situated. Acknowledgements which shall be signed and dated in token of the receipt of the notices shall be obtained in a book maintained for the purpose.

9. All notices and communications required under the Act shall be in writing.

10. When the registered holder or other person on whom any of the notices or communications referred to in the foregoing rules is to be served is absent, service may be effected by delivering the notice on communication to some adult male member of his family at his usual place of abode or to his authorized agent or by affixing it on some conspicuous part of his last known residence or on some conspicuous part of the land to which the notice or communication relates. When service is effected by so affixing the notice, the serving officer shall note the method of service on the printed form of acknowledgment which is returned to the officer issuing the notice or communication.

Rules under clause 2 (*f*).

The survey marks used and the labour employed under section 8 shall ordinarily be supplied in the first instance at the cost of Government. Where, however, a registered holder of land or his tenant offers to supply survey marks and labour at his own cost, the survey officer may grant permission accordingly if he is satisfied that the progress of survey will not be retarded thereby. The survey officer shall be competent, however to rescind such permission if he should find at any time that delay in the landholder's supply of either survey marks or labour has set back progress of operations.

Rules under clause 2 (*g*).

CADASTRAL SURVEYS OTHER THAN TOWN SURVEYS.

1. The total charges advanced under section 8 of the Act for any Government village or part of a Government village shall be apportioned

on the lands surveyed in proportion to the area thereof as ascertained in the manner explained below :—

(1) The area of fields for which the holders have supplied labour and survey marks shall be deducted from the total area dealt with.

(2) An acre of wet land shall (save in the deltaic tracts in Godavari, KrishnaGuntur and Thanjavur districts and in the districts of Malabar and South Kanara where all classes of land are for this purpose treated alike) be considered as equivalent to an acre and a half of dry, waste or poramboke. All fields of over 50 acres in extent shall be charged at one-fourth the acreage rate adopted for dry land.

(3) The total charges shall be divided by the conventional area in acres in terms of dry resulting from the operations of sub-rules (1) and (2). The rate of charge per acre of dry, waste or poramboke having been thus determined that for wet shall be computed at half as much again as the dry rate and that for fields of over 50 acres in extent shall be computed at one-fourth of the dry rate. In the districts and tracts expected in sub-rule (2), the rate per acre shall be the same for dry and for wet. The charges shall be recovered from all registered holders at the rates so computed, Government being treated as the registered holder of unoccupied land.

2. The determination of the rates at which the charges have to be levied shall begin as soon as the survey of one or more villages has been completed.

First month.—The charges incurred up to the end of the month shall be averaged over the area surveyed so far and the acreage rate shall be calculated in accordance with the procedure prescribed in rule 1. The demand on the villages the survey of which has been completed shall be arrived at by applying the average rate calculated as above to the area according to the latest revenue adangals after excluding therefrom the fields for which the holders have supplied stones and labour. The demand together with a list of the excluded fields shall be sent to the Revenue department for collection. The remainder of the cost of relating to the surveyed area of incomplete villages shall be carried forward for apportionment in the succeeding month.

3. *Second month.*—The total of the amount left over in the preceding month and of the cost incurred in the month shall be averaged as in the first month over the total of the surveyed area left over in the preceding month and of the area surveyed in the month after deducting excluded fields. At the rate so arrived at the demand for the villages, the survey of which has been completed shall be worked out and communicated to the Revenue department as in rule 2, the balance of the surveyed area of incomplete villages and the cost being left over for apportionment in the succeeding month.

The procedure shall be repeated until the survey of the tract is completed. The cost of any further survey necessary for supplying omission or for disposing of objections shall be apportioned and recovered in the manner above prescribed.

4. As soon as each demand is received, the Tahsildar shall work out the demand separately for each holding and forward the demand notice in duplicate to the village headman for collection.

5. The whole or a specified portion of the cost of survey of an estate or portion of an estate shall on application by the proprietor of the estate be apportioned as may be directed on the following principles by Government

or by any officer or authority to whom the power has been delegated by it under section 20 (i) of the Act, among the holders of the lands or the persons interested in the boundaries which have been surveyed :—

(*a*) The cost per acre shall be calculated in accordance with the instructions laid down in rule 1 above for Government lands.

(*b*) The apportionment shall be made only in cases where the proprietor admits in writing that his tenants have occupancy rights.

TOWN SURVEYS.

6. The acreage rate for the recovery of the cost of stones and hired labour shall be obtained in the following manner :—

The blocks into which the town has been divided during survey have been classified as close, medium and open according to the number of houses on them.

An acre of close area shall be considered as equivalent to 4 acres of medium and 12 acres of open area.

7. The total charges shall be divided by the conventional area in acres in terms of open area. The acreage rate for open area having been determined, that for medium area shall computed at three times the rate for open area and that for close area at twelve times.

8. The determination of the rates at which the charges have to be levied shall be made when the mapping of the town has been completed. The demand shall be sent to the Revenue department for collection.

9. In determining the demand against the municipality, the charges in respect of the lands owned by, vested in, or alienated to the municipality shall be worked out and only two-thirds of the cost recovered from the municipality, the remaining one-third being borne by Government.

Rules under clause 2 (h).

Processes issued under the Act shall ordinarily be served by the village establishment and no fees shall be charged for such service. The Director of Survey, may however, sanction the employment of a special establishment for the service of such notices, and in such event the following scales of fees shall be payable for process served by such special establishment, viz—

	Amount leviable by survey officer in exercise of	
	Original jurisdiction.	Appellate jurisdication.
For each summons or notice—	RS. A. P.	RS. A. P.
(*a*) to a single defendant, respondent or witness.	0 8 0	1 0 0
(*b*) to every additional defendant, respondent or witness residing in the same village, if the processes be applied for at the same time.	0 4 0	0 8 0

NOTE.—For processes applied for and ordered to be served urgently, the fee shall be 1½ times the ordinary fee.

2. Two copies of orders passed under sections 9 (1), 10 (1) and 11 (1) of the Act shall be granted to applicants on payment of a charge which will be levied in the form of copy-stamped papers at the rate of one sheet for every 175 words whether in English or in a vernacular. A sheet means a copy-stamped paper bearing a stamp of the value of 3 annas or surcharged 3 annas. If an applicant produces an unsurcharged copy-stamped paper of the value of 2 annas, the number of words to be written on such a copy, stamped paper is limited to 117 instead of 175. Applications for copies shall be stamped with court-fee stamps as prescribed in Schedule II of the Court Fees Act.

The fee for copies of plans, sketches and diagrams shall be fixed at 6 annas per sheet of paper of the size used for a page of the Field Measurement Book, and 6 annas for every additional sheet required.

SURVEY MANUAL, CHAP. INTRODUCTION, PAGE VIII, PARAGRAPH 4.

APPENDIX II.

PROGRAMME OF RE-SURVEYS AND DESCRIPTION OF METHODS FOLLOWED DURING INITIAL SURVEYS.

District.	Taluk.	Estate, etc.	Particulars of survey.					
			Original survey.		Re-survey.		Second re-survey.	
			Year of completion.	System.	Year of re-survey done.	System.	Year of re-survey done.	System.
Ganjam.	Chatrapur ..	..	1876	Triangles.	1904–09	Revision survey.	..	..
	Berhampur ..	..	1876	Do.	1904–09	Do.	..	..
	Chicacole ..	..	1872	Do.	1904–08.	Do.	..	..
	(a) Goomsur.	..	1880	Do.	1907–10.	Do.	..	..
	(b) Agency portion.	..	1907	Diagonal and offset.	..	....	..	..
	Aska ..	..	1880	Triangles.	1904–10.	Revision survey.	..	..
	(b) Agency portion.	..	1907	Diagonal and offset.		..	..	..
	Chokkapad ..	..	1907	Do.	..	..	..	..
	Mohiri Khand.	..	1907	Do.	..	..	..	..
	Parlakimedi Maliahs.	..	1909	Do.	..	..	..	..
	..	Jalantra ..	1879	Triangles	..	..	..	..
	..	Serugada ..	1901	Diagonal and offset.	..	..	..	..
	..	Humma ..	1910	Do.	..	..	..	..
	..	Parlakimedi.	1913	Do.	..	..	..	..
	..	Jarada ..	1913	Do.	..	..	..	..
	..	Nandigam ..	1914	Do.	..	..	..	..
	..	Biridi ..	1914	Do.	..	..	..	..
	..	Kallikotta Atagada.	1915	Kallikota Atagada. system.	..	..	..	..
	..	Dharakota ..	1916	Do.	..	..	..	..
	..	Chikati ..	1918	Punganur	..	..	..	..
Visakapatnam.	Golkonda ..	..	1888	Triangles.	..	..	..	..
	Palkonda ..	..	1886	Do.	..	..	..	..
	Sarvasiddhi ..	..	1888	Diagonal and party plane. table.	1909–11. (portion).	Diagonal and offset.	..	..
	..	Kasimkotta.	1900	Diagonal and offset.	..	..	..	..
	..	Vizianagaram.	1906	Do.	..	..	..	..
	..	Pedda Merangi.	1904	Do.	..	..	..	..
	..	Chinna Merangi.	1907	Do.	..	..	..	..
	..	Anakapalle	1917	..	..	..	..	..
Godavari.	Rajahmundry.	..	1862	Khasra ..	1894–96.	Diagonal and offset.	..	..
	Amalapuram.	..	1861	Do. ..	1893–94.	Block map.	1927–29.	Diagonal and offset.
	Razole ..	..	1862	Do. ..	1894.	Do.	1920–21.	Do.

PROGRAMME OF RE-SURVEYS AND DESCRIPTION OF METHODS FOLLOWED DURING INITIAL SURVEYS—*cont.*

District.	Taluk.	Estate, etc.	Particulars of survey.					
			Original survey.		Re-survey.		Second re-survey.	
			Year of completion.	System.	Year of re-survey done.	System.	Year of re-survey done.	System.
Godavari—*cont.*	Peddapuram.	..	1862	Khasra ..	1894–96.	Diagonal and offset.	..	..
	Ramachandrapuram.	..	1861	Do.	1893–94.	Block map.	1926–28.	Diagonal and offset.
	Kakinada ..	..	1881	Do.	1894	Do.	1928–29.	Do.
	Polavaram division.	..	1896 and 1907	Diagonal and offset.	..	..	..	..
	Yellavaram division.	..	1896	Do.	..	..	..	..
	Chodavaram division.	..	1883	Do.	..	..	..	..
	Nugur ..	..	..	..	..	..	..	..
	..	Gollaprolu ..	1917	Diagonal and offset.	..	..	..	..
	..	Pittapur ..	1905	Do.	..	..	..	..
Kistna.	Narasapur ..	..	1862	Khasra ..	1892–94.	Block map.	1920–22.	Diagonal and offset.
	Bhimavoram.	..	1862	Do.	1892–93.	Do.	1923–25.	Do.
	Tanuku ..	..	1861	Do.	1892–93.	Do.	1921–28.	Do.
	Bezwada ..	..	1864	Do.	1892–94.	Do.	1926–28.	Do.
	Divi ..	..	1864	Do	1894.	Do.	1923–24.	Do.
	Nandigama ..	..	1866	Do.	1896–98.	Diagonal and offset.	1927–28.	Do.
	Ellore ..	..	1863	Do.	1894–96.	Do.	1925–27 (portion).	Do.
	Yernagudem.	..	1863	Do.	1894–96.	Do.	1926–27.	Do.
	Gudivada ..	..	1865	Do.	1892–94.	Block map.	1925–27.	Do.
	Bandar ..	..	1864	Do.	1892–94.	Do.	1924–26.	Do.
	Kaikular ..	..	1865	Do.	1894 and 1912.	Do.	1924–26.	Do.
	Nuzvid ..	..	1903	Diagonal and offset.	..	..	..	..
	..	Thottapalli.	1888	Soil Block Survey.	..	..	..	..
	..	Delta Zamindaries.	1893	Mamul wet.	..	..	..	..
	..	Telaprole ..	1892	Block map.	..	..	..	..
	..	Medur-Kapileswarapuram.	1892	Do.	..	..	..	..
	..	Yedaval ..	1898	Diagonal and offset.	..	..	..	..
	..	Narayanapuram-Vasantavada.	1905	Do.	..	..	..	..
	..	South Vallur.	1913	Do.	..	..	..	..
	..	Mirzapuram-Medur.	1917	Do.	..	..	..	..

PROGRAMME OF RE-SURVEYS AND DESCRIPTION OF METHODS FOLLOWED DURING INITIAL SURVEYS—*cont.*

District.	Taluk.	Estate, etc.	Particulars of Survey.					
			Original survey.		Re-survey.		Second re-survey.	
			Year of completion.	System.	Year of re-survey done.	System.	Year of re-survey done.	System.
Guntur.	Ongole ..	..	1867	Khasra ..	1904–06.	Diagonal and offset.	..	Diagonal and offset.
	Bapatla ..	..	1867	Do. ..	1893–96.	Block map.	1918–20.	..
	Narasaraopet.	..	1867	Do. ..	1899–02.	Diagonal and offset.	..	..
	Vinukonda ..	..	1867	Do. ..	1901–03.	Do.	..	..
	Palnad ..	..	1867	Do.	1899–03.	Do.	..	..
	Tenali ..	..	1867	Do.	1896.	Do.	1916–18.	Diagonal. and offset.
	Guntur ..	..	1867	Do.	1896–98.	Do.	..	..
	Sattenapalle.	..	1867	Do. ..	1897–00.	Do.	..	..
	Repalle ..	..	1867	Do. ..	1894–96.	Do.	1917–19.	Punganur.
	..	Venkatagiri	1920	Punganur.	..	..	..	..
Nellore.	Kanigiri ..	..	1872	Khasra ..	1903–05.	Diagonal and offset.	..	..
	Kandukur ..	..	1869	Do.	1902–04.	Do.	..	..
	Gudur ..	....	1867	Do.	1900–02.	Do.	..	..
	Rapur ..	..	1867	Do.	1901–03.	Do.	..	..
	Atmakur ..	..	1867	Do.	1901–03.	Do.	..	..
	Udayagiri ..	..	1872	Do.	1903–04.	Do.	..	..
	Nellore ..	..	1867	Do.	1900–02.	Do.	..	..
	Kavali ..	..	1867	Do.	1902–04.	Do.	..	..
	Kovur ..	..	1867	Do.	1900–02.	Do.	..	..
	..	Manabolu division. ..	1904	Diagonal and offset. ..	..	..	..	..
	..	Kamepalli ..	1905	Do.	..	..	..	..
	..	Venkatagiri.	1920	Punganur	..	..	..	..
Kurnool.	Markapur ..	..	1875	Triangles.	1907–08.	Revision survey.	..	..
	Cumbum ..	..	1875	Do.	1906–08.	Do.	..	..
	Sirvel ..	..	1869	Khasra ..	1897.	Do.	..	..
	Nandyal ..	..	1869	Do.	1900–04.	Diagonal and offset.	..	..
	Nandikotkur.	..	1866	Do.	1986–03.	Do.	..	..
	Dhone ..	..	1869	Do. ..	1896–00.	Do.	..	..
	Pattikonda ..	..	1874	Do. ..	1905–07.	Revision survey.	..	..
	Koilkuntla ..	..	1874	Do. ..	1904–06.	Diagonal and offset.	..	..
	Kurnool ..	..	1862	Do. ..	..	Do.	..	..
	..	Benganapalle.	1904	Diagonal and offset.	..	..	..	..
Bellary.	Adoni ..	..	1879	Triangles	..	..	..	..
	Alur ..	..	1882	Do.	..	..	..	..
	Bellary ..	..	1888	Do.	..	..	..	..
	Rayadrug ..	..	1890	Plane table. ..	..	..	..	..
	Hospet ..	..	1888	Triangles	..	..	..	..
	Kudligi ..	..	1889	Do.	..	..	..	..
	Harpanahalli.	..	1891	Plane table. ..	..	..	..	..
	Huvinahadagalli.	..	1889	Do.	..	..	..	..
	Siruguppa ..	..	1888	Triangles.	..	..	..	..

PROGRAMME OF RE-SURVEYS AND DESCRIPTION OF METHODS FOLLOWED DURING INITIAL SURVEYS—*cont.*

District.	Taluk.	Estate, etc.	Particulars of Survey. Original survey. Year of completion.	Original survey. System.	Re-survey. Year of re-survey done.	Re-survey. System.	Second re-survey. Year of re-survey done.	Second re-survey. System.
Anantapur.	Gooty ..	..	1886	Triangles.	..	..	..	..
	Tadpatri ..	..	1886	Do.	..	..	..	..
	Anantapur ..	..	1886	Plane table and Block map.	..	..	..	..
	Dharmavaram.	..	1894	Block map.	..	..	..	..
	Kalyandrug ..	..	1894	Plane table and Block map.	..	..	..	..
	Penukonda ..	..	1885	Triangles.	..	..	..	..
	Hindupur ..	..	1894	Block map.	..	..	..	..
	Madakasira ..	..	1894	Do.	..	..	..	..
	Kadiri ..	..	1881	Triangles.	1911–13.	Revision survey.	..	..
Cuddapah.	Jammalamadugu.	..	1873	Triangles.	1904–06.	Revision survey.	..	..
	Proddatur	..	1874	Do.	1904–06.	Do.	..	..
	Badvel ..	..	1875	Do.	1905–09.	Do.	..	..
	Siddhavattam.	..	1875	Do.	1905–10.	Do.	..	..
	Cuddapah ..	..	1874	Do.	1905–08.	Do.	..	..
	Pullivendla ..	..	1877	Do.	1905–10.	Do.	..	..
	Kamalapuram.	..	1874	Do.	1905–08.	Do.	..	..
	Rayachoti ..	..	1876	Do.	1907–11.	Do.	..	..
	Pullumpet ..	..	1876	Do.	1905–09.	Do.	..	..
Chingleput.	Saidapet ..	..	1873	Triangles.	1905–10.	Revision survey.	..	..
	Ponneri ..	..	1872	Do.	1909–10.	Do.	..	..
	Tiruvallur ..	..	1873	Do.	1909–10.	Do.	..	..
	Kancheepuram.	..	1873	Do.	1907–10.	Do.	..	..
	Chingleput ..	..	1873	Do.	1905–08.	Do.	..	..
	Maduranta-kam.	..	1873	Do.	1906–09.	Do.	..	..
	Sriperumbudur.	..	1873	Do.	1905–10.	Do.	..	..
Chittoor.	Palmaner ..	..	1880	Triangles.	1913–14	Revision survey.	..	..
	Chandragiri ..	..	1879	Do.	1913–14	Do.	..	..
	Chittoor ..	..	1880	Do.	1912–14	Do.	..	..
	Vayalpad ..	..	1879	Do.	1908–12	Do.	..	..
	Madanapalle.	..	1882	Do.	1911–14	Do.	..	..
	..	Punganur ..	1914—16	Punganur system.	..	..	..	..
North Arcot	Walajapet ..	..	1876	Triangles.	1910–13	Revision survey.	..	..
	Arkonam ..	..	1875	Do.	1910–12	Do.	..	
	Wandiwash ..	..	1878	Do.	1912–14	Do.	..	
	Cheyyar ..	..	1875	Do.	1911–13	Do.	..	..
	Polur ..	..	1877	Do.	1912–14	Do.	..	..
	Vellore ..	..	1877	Do.	1912–14	Do.	..	..
	Gudiyattam ..	..	1878	Do.	1911–13	Do.	..	..
	Tirupattur ..	..	1868	Khasa ..	1905–07	Diagonal and offset	..	..
	Tiruvannamalai.	.. ..	1882 ..	Triangles.	1917–19	Punganur.	..	..

PROGRAMME OF RE-SURVEYS AND DESCRIPTION OF METHODS FOLLOWED DURING INITIAL SURVEYS—*cont.*

District.	Taluk.	Estate, etc.	Particulars of Survey.					
			Original survey.		Re-survey.		Second re-survey.	
			Year of completion.	System.	Year re-survey done.	System.	Year re-survey done.	System.
North Arcot—*cont.*	Arni ..	..	1877	..	1914 ..	Diagonal and offset.	..	..
	..	Yelagiri ..	1891	Diagonal and offset.	..	..	..	..
	..	Timimaji Ammal's Estate.	1891	Do.	..	..	..	..
	..	Kakangarai.	1891	Do.	..	..	..	..
	..	Nattam ..	1900	Do.	..	..	..	..
	..	Amburpet	1906	Do.	..	..	..	..
South Arcot.	Tindivanam ..	..	1800	Triangles	1916–17	Diagonal and offset.	..	..
	Gingee ..	..	1881	Do.	1917–19	Do.	..	..
	Kallakurchi ..	..	1884	Do.	1918–20	Do.	..	..
	Tirukkoyilur ..	..	1885	Do.	1917–20	Do.	..	..
	Villupuram ..	..	1881	Do.	1915–16	Do.	..	..
	Cuddalore ..	..	1883	Do.	1914–16	Revision Survey.	..	..
	Chidambaram.	..	1887	Do.	1920–21	Diagonal and offset.	..	..
	Vriddhachalam.	..	1886	Do.	1919–21	Do.	..	..
Salem.	Krishnagiri ..	..	1867	Khasra ..	1904–06	Diagonal and offset.	..	..
	Hosur ..	..	1868	Do. ..	1995–07	Do.	..	..
	Dharmapuri ..	..	1865	Do. ..	1903–06	Do.	..	..
	Uttankarai ..	..	1867	Do. ..	1893–96	Do.	..	..
	Attur ..	..	1865	Do. ..	1893–96	Do.	..	..
	Tiruchengode..	..	1865	Do. ..	1893–95	Do.	..	..
	Salem ..	..	1865	Do. ..	1893–96	Do.	..	..
	Yercaud ..	..	1889	Do. ..	1901	Do.	..	..
	Omalur ..	..	1865	Do. ..	1893–96	Do.	..	..
	Namakkal ..	..	1865	Do. ..	1893–96	Do.*	1914–16	Diagonal and offset.
	Rasipur ..	..	1865	Do. ..	1893–96	Do.	..	..
	..	Kadathur ..	1891	Plane table.	..	..	..	..
	..	Perakulam ..	1901	Diagonal and offset.	..	..	..	..
	..	Berikai ..	1903	Do.	..	..	..	..
	..	Salem ..	1903	Do.	..	..	..	..
	..	Bagalur ..	1903	Do.	..	..	..	..
	..	Shulagiri ..	1905	Do.	..	..	..	..
	..	Karumanur	1904	Do.	..	..	..	..
	..	Namakkal ..	1905	Do.	..	..	..	..
	..	Kumaramangalam.	1905	Do.	..	..	..	..
	..	Kalyani ..	1906	Do.	..	..	..	..
	..	Irugalur ..	1907	Do.	..	..	..	..
	..	Tirumanampettai.	1907	Do.	..	..	..	..
	..	Agrahara Valavandi.	1918	Do.	..	..	..	..
	..	Kannankurichi.	1917	Do.	..	..	..	..

* Kollimalais.

PROGRAMME OF RE-SURVEYS AND DESCRIPTION OF METHODS FOLLOWED DURING INITIAL SURVEYS—*cont.*

District.	Taluk.	Estate, etc.	Particulars of Survey.					
			Original survey.		Re-survey.		Second re-survey.	
			Year of completion.	System.	Year re-survey done.	System.	Year re-survey done.	System.
Coimbatore.	Kollegal ..	..	1880	Triangles	..	..	..	..
	Gobichetti-palayam.	..	1873	Do.	..	..	..	..
	Bhavani ..	..	1873	Do.	..	..	..	..
	Erode ..	..	1873	Do.	..	..	..	..
	Palladam ..	..	1873	Khasra ..	1908–10	Diagonal and offset.	..	..
	Coimbatore ..	..	1873	Do.	1906–10	Do.	..	..
	Pollachi ..	..	1877	Triangles..	1910 (portion)	Do.	..	..
	Udamalpet ..	..	1877	Do.	..	..	..	..
	Dharapuram ..	..	1875	Do.	..	..	..	..
	Avanashi ..	..	1873	Do.	1910	Diagonal and offset.	..	..
	..	Metrathi ..	1891	Plane table.	..	..	..	..
	..	Mavuttam-patti.	1897	Plane table and Block map.	..	..	..	..
	..	Sivasamu-dram.	1898	Diagonal and offset.	..	..	..	..
	..	Avalappam-patti.	1904	Do.	..	..	..	..
	..	Negenam ..	1911	Do.	..	..	..	..
	..	Myleripalai-yam.	1912	Do.	..	..	..	..
Tiruchirappalli.	Udaiyar-palaiyam.	..	1864	..	1865 ..	Block map.	1921–23	Diagonal and offset.
	Perambalur ..	..	1864	..	1895 ..	Do.	1921–24	Do.
	Musiri ..	..	1865	..	1891–96	Do.	1919–22	Do.
	Tiruchirap-palli.	..	1863	Khasra ..	1891–94	Do.	1912–14	Do.
	Kulittalai ..	..	1863	..	1891–95	Do.	1922–24	Do.
	Karur ..	..	1875	Trinagles.	..	..	..	Do.
	Lalgudi ..	..	1864	Khasra ..	1891–95	Block map.	1918–20	Do.
	..	Marunga-puri.	1897	Diagonal and offset.	..	..	..	..
Tanjore.	Shiyali ..	..	1888	Triangles.	1920–22	Diagonal and offset.	..	..
	Mayuram ..	..	1888	Plance talbe.	1914–16	Do.	..	..
	Kumbakonam.	..	1888	Triangles..	1921–22	Do.	..	..
	Papanasam ..	..	1890	Do.	1920–22	Do.	..	..
	Nannilam ..	..	1889	Plane table.	1917–20	Do.	..	..
	Nagapattinam.	..	1889	Do.	1919–20	Do.	..	..
	Tiruttural-pundi.	.. ..	1890	Do.	1919–22	Do.	..	..
	Mannargudi ..	..	1888	Do.	1915–17	Do.	..	..

PROGRAMME OF RE-SURVEYS AND DESCRIPTION OF METHODS FOLLOWED DURING INITIAL SURVEYS—*cont.*

District.	Taluk.	Estate, etc.	Particulars of Survey.					
			Original survey.		Re-survey.		Second re-survey.	
			Year of completion.	System.	Year re-survey done.	System.	Year re-survey done.	System.
Tanjore—*cont.*	Tanjore ..	..	1890	Triangles .. and Plane table.	1916–20	Diagonal and offset.	..	..
	Pattukkottai ..	..	1890	..	1921–22	Do.	..	..
	Arantangi ..	..	1889	Plane table. ..	1919–20	Do.	..	..
	..	Chattram villages.	1900	Diagonal and offset.	..	..	..	..
Madhurai.	Dindigul ..	..	1884	Triangles ..	1914–16	Revision Survey.	..	..
	Palani ..	..	1880	Do.	1913–15	Do.	..	..
	Mathurai ..	..	1885	Do.	1915–16	Diagonal and offset.	..	..
	Melur ..	..	1884	Do.	1915–17	Do.	..	..
	Periyakulam.	..	1880	Do.	1914–15	Revision Survey.	..	..
	Tirumangalam.	..	1885	Do.	1916	Diagonal and offset.	..	..
	Nilakkottai ..	..	1885	Do.	1915–16	Do.	..	..
	Kodaikanal Division.	..	1888	Triangles in cultivation; otherwise theodolite	1921–22	Do.	..	..
	..	Bodinayakanur.	1880	Triangles ..	..	..	..	..
	..	Gandammanaickanur.	1880	Do.	..	..	..	..
	..	Uttappanaickanur.	1880	Do.	..	..	..	..
	..	Saptur ..	1899	Diagonal and offset.	..	..	..	..
	..	Periyar-affected lands.	1899	Do.	..	..	..	..
	..	Mambarai.	1900	Do.	..	..	..	..
	..	Tevaram ..	1900	Do.	..	..	..	..
	..	Vellayakundam.	1900	Do.	..	..	..	..
	..	Kakoor ..	1903	Do.	..	..	..	..
	..	Rettayambadi.	1916	Diagonal offset.	..	..	..	..
	..	Ersakkanayakkanur.	1917	Do.	..	..	..	..
	..	Goripalaiyam.	1917	Do.	..	..	..	..
Ramanathapuram.	Sattur ..	..	1874	Traingles ..	1910–11	Diagonal and offset.	..	..
	Srivilliputtur.	..	1874	Do.	1911–12	Do.	..	..
	Paramagudi ..	..	1882	Do.	1917	Do.	..	..
	Aruppukkottai.	..	1985	Do.	1917	Do.	..	..
	..	Rameswaram Devasthanam.	1905	Diagonal and offset.		..	..	..
	..	Devakottai.	1903	Do.	..	..	..	..
	..	Kodangai ..	1905	Do.	..	..	..	..

PROGRAMME OF RE-SURVEYS AND DESCRIPTION OF METHODS FOLLOWED DURING INITIAL SURVEYS—*cont.*

District.	Taluk.	Estate, etc.	Particulars of Survey.					
			Original survey.		Re-survey.		Second re-survey.	
			Year of completion.	System.	Year re-survey done.	System.	Year re-survey done.	System.
Ramanathapuram—*cont.*	..	Narikudi-Muthanendal.	1905	Diagonal and offset.	..	..	..	..
	..	Mathurai Devasthanam.	1917	Do.	..	..	..	..
	..	Pamban Island.	1915	Do.	..	..	..	..
	..	Puvadi ..	1916	Do.	..	..	..	..
Tirunelveli.	Sankaranayinarkoyil.	..	1874	Triangles ..	1910–11	Diagonals and offset.	..	..
	Tenkasi ..	..	1870	Khasra ..	1904–07	Do.	..	..
	Ambasamudram.	..	1872	Do.	1905–08	Do.	..	..
	Srivaikuntam.	..	1872	Do.	1906–11	Do.	..	..
	Tirunelveli ..	..	1871	Do.	1904–07	Do.	..	..
	Nanguneri ..	..	1872	Do.	1907–09	Do.	..	..
	Tiruchendur ..	..	1872	Do.	1908 ..	Do.	..	..
	Kovilpatti ..	..	1874	Triangles.	1910–10	Do.	..	..
	..	Ettiyapuram.	1900	Diagonal and offset.	..	..	..	..
	..	Sivagiri ..	1901	Do.	..	..	..	..
	..	Tiruvettanallur.	1916	Do.	..	..	..	..
Nilgiris.	Coonoor ..	..	1883	Theodolite, Plane table and prismatic Compass.		..	..	..
	Gudalur ..	..	1883	Do.	1920–22	As in column 5.	..	..
	Ootacamund.	..	1883	Do.	..	..	..	..
Malabar.	Chirakkal ..	..	1896	Plane table and Block map and F.M.	..	..	..	..
	Kottayam ..	..	1895	Block map.	..	..	..	..
	Kurambranad.	..	1893	Plane table.	..	..	..	..
	Wynaad ..	..	1899	Theodilite, Plane table.	1920–22	As in column 5.	..	..
	Calicut ..	..	1896	Block map	..	..	..	..
	Ernad ..	..	1896	Do.	..	..	..	..
	Walavanad ..	..	1892	Plane table.	..	..	..	..
	Ponnani ..	..	1893	Do.	..	..	..	..
	Palghat ..	..	1889	Do.	..	..	..	..
	Cochin ..	..	1891	Do.	1915 ..	Town Survey.	..	..
South Kanara.	Coondapur ..	..	1896	Block map.	..	..	..	..
	Udipi ..	..	1896	Do.	..	..	..	..
	Mangalore ..	..	1894	Do.	..	..	..	..
	Uppianangadi.	..	1896	Do.	..	..	..	..
	Kasargod ..	..	1893	Plane .. table.	..	..	..	..
	Karakal ..	..	1896	Block map.	..	..	..	..
Anjengo.	..	..	1891	Plane table.	..	..	..	..

The methods of survey adopted during the initial surveys of the State were—

(1) Khasra.

(2) Triangles.

(3) Plane table.

(4) Block map.

(5) Kallikote and Atagada.

(6) Theodolite combined with Prismatic Compass and Plane table.

(7) Diagonal and offset.

(8) Punganur.

(9) Ray system.

Khasra followed from 1858 *to* 1865.—Boundaries only of quadrilateral survey fields measured. If shape was irregular, the field was divided into quadrilaterals or triangles and the sides of these measured. In some cases, the diagonals of the quadrilaterals were also measured. Subdivisions were measured by Settlement department. Sketches of survey fields showing measurements were prepared but these were often incomplete. Village maps were prepared on a traverse basis.

Triangles from 1866 *to* 1887.—Measurements were taken from stone to stone to divide each survey field into triangles. In 1877 surveyors were permitted to take offsets to stones at bends less than 50 links from a line between any two other stones, but this was not done to any appreciable extent. Subdivisions were measured by Settlement department. Village maps were prepared on a traverse basis.

Plane table from 1887 *to* 1891—So called because the traverse plotted skeleton village map was pricked off on two sheets each containing about 160 acres on the 40″ scale, the size of a plane table head as used in the Madras Survey. The plane table was not used at all. Boundaries of survey fields were sketched into this sheet as demarcation progressed. The sides of the triangles formed by the theodolite stations were measured and offsets taken to all field marks. Measurements were entered on the sheets. The outer boundaries of fields containing subdivisions were also measured and the subdivisions divided into quadrilaterals and triangles and measured. Measurements of these were preserved in a record called the subdivisons interstitial field book.

Block map from 1891 *to* 1896.—Theodolite stations were fixed at village trijunctions and at other points to form blocks of about 160 acres. These were plotted on the 40″ scale. The blocks were divided into large triangles and the boundaries of survey fields and subdivisions fixed by offsets taken from the sides of the triangles. All the measurements taken were entered on the block sheets. Village maps were formed by superimposing reductions of the block maps on the traverse skeletons.

Kallikote and Atagada.—Followed during the survey of the Kallikote, Atagada and Dharakota Estates, 1912–1917. A modification of the plane table system. Each holding became a survey field. Lines were run between theodolite stations and offsets taken to all field bends. Field boundaries were not measured. Measurements were recorded in Khandam sketches and in field books. The areas have since been transferred to Andhra Pardesh State.

Theodolite, Prismatic Compass amd Plane table.—Done in the Nilgiris district and in the Malabar, Wynaad, chiefly with the theodolite and chain supplemented with the plane table and prismatic compass.

Diagonal and offset.—*See* Chapters I to IX. This is the method now employed during the survey and re-survey of Government lands.

Punganur.—So called because first employed during the survey of the Punganur Estate during 1914 to 1916. The re-survey of the Government taluks of Tiruvannamalai (North Arcot) and Repalle (Guntur) was done under this system and it is now generally employed for the survey of estates. For description see paragraph 7, Introduction.

Ray system of survey.—(*see* note at 2 to 4).

SURVEY MANUAL, CHAP. IV, RULE 14]

APPENDIX No. III.

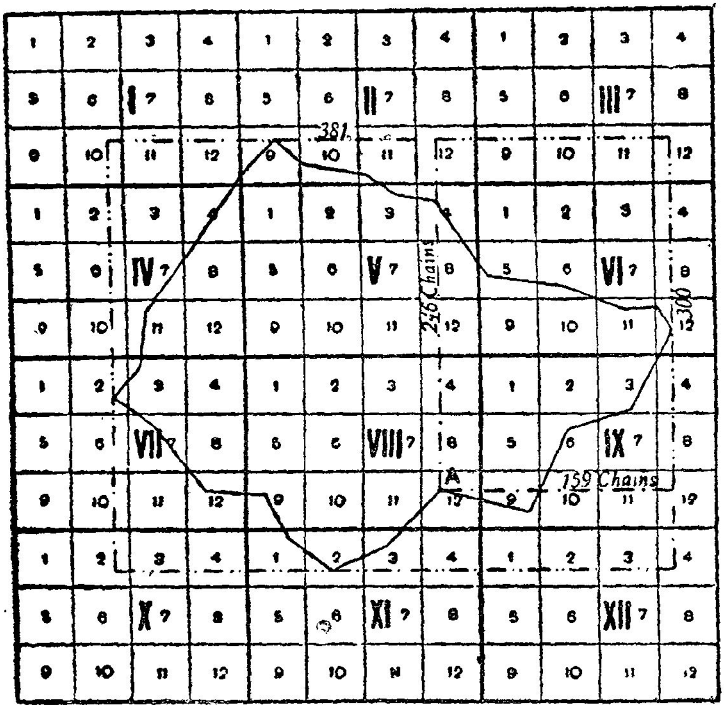
CONSTANT CORRECTIONS TO BE APPLIED FOR THE REDUCTION OF LAMBTON'S VALUES TO CORRESPOND WITH MODERN SERIES VALUES.

District.	Corrections to be applied to		Remarks.
	Latitude.	Longitude.	
	'	' "	
Guntur	— 5·08	— 105·96	The corrections herein entered have been deduced empirically for different districts, by comparing Lambtons' values with those of the G.T. Modern Survey for the same stations, and assuming that the differences are applicable to neighbouring stations of Lambton's, not re-observed from in the course of modern operations. The modern value of the Madras Observatory has been taken as Lat. 13° 04′05″ ·932, Long. 80° 17′ 22″·166 the same as that given in the Preliminary chart of the Modern Coast series, season 1879–80, published by the Survey of India, in August 1881.
Kurnool	— 4·06	— 107·39	
Bellary	— 4·43	— 107·35	
Anantapur ..			
Cuddapah ..	— 4·95	— 107·56	
Nellore	— 5·07	— 107·24	
Chingleput ..	— 4·95	— 107·56	
Madras			
North Arcot ..	— 5·10	— 107·92	
South Arcot ..	— 5·65	— 108·55	
Salem	— 5·44	— 107·68	
Coimbatore ..	— 5·69	— 07·81	
Tiruchirappalli ..	— 5·76	— 07·91	
Tanjore	— 5·56	— 07·79	
Mathurai ..	— 6·28	— 07·21	
Tirunelveli ..	— 7·06	— 06·98	
Malabar	— 5·96	— 104·49	
South Kanara ..	— 0·32	— 106·92	

[SURVEY MANUAL CHAP. V. RULE 9]

APPENDIX No. IV.

DIAGRAM FOR DETERMINING THE NUMBER OF SHEETS OF A TRAVERSE AND THE POSITION OF STATION A.



REFERENCE.

The Roman numerals denote rectangles or sheets.

The Arabic numerals denote the squares into which the sheets divided.

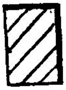
SURVEY MANUAL, CHAP. XIV, RULE 14]

APPENDIX No. V.

REFERENCE SHEET OF TOPOGRAPHICAL DETAILS APPEARING IN 16-INCH OR OTHER SCALE VILLAGE MAPS, ETC., INTENDED FOR HALF REDUCTION.

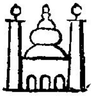
1 **KANNANUR** Parent village.

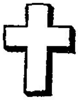
2 **Adanur** Hamlet.

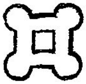
3  Tiled or terraced house.

4 Thatched house.

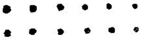
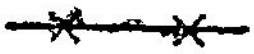
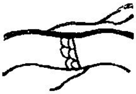
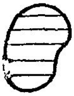
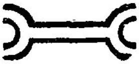
5 Pagoda.

6  Mosque.

7  Church

8  Fort.

9 Lamp post.

10		Light house
11		Foot-path
12		Cart-track.
13		Earthen Road.
14		Gravelled road and mile stone.
15		Metalled road and mile stone.
16		Railway.
17		Telegraph.
17		Telephone:
18		River, canal and aqueduct.
19		River and stream with anicut.
20		Culvert and bridge.
21		Ferry.
22		Tank.
23		Permanent calingula.

Temporary calingula.

24 Permanent sluice.

Temporary sluice.

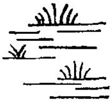
25 Square well.

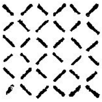
26 Round well.

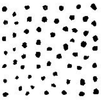
27 Indigo vat.

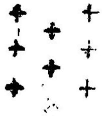
28 Fountain.

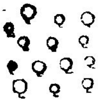
29 Hydrant.

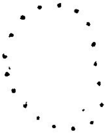
30  Swamp.

31  Salt pan.

32  Sand.

33  Burial ground.

34  Scrub and jungle.

35  Limit of rocky ground.

36 Hill.

37

Lambton's G. T. Survey station and height in feet above sea level.

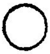
38

Modern Series do.

39

Madras Survey. do.

40 Village boundary station.

41  Khandam station.

42 Minor circuit station.

APPENDIX No. VI

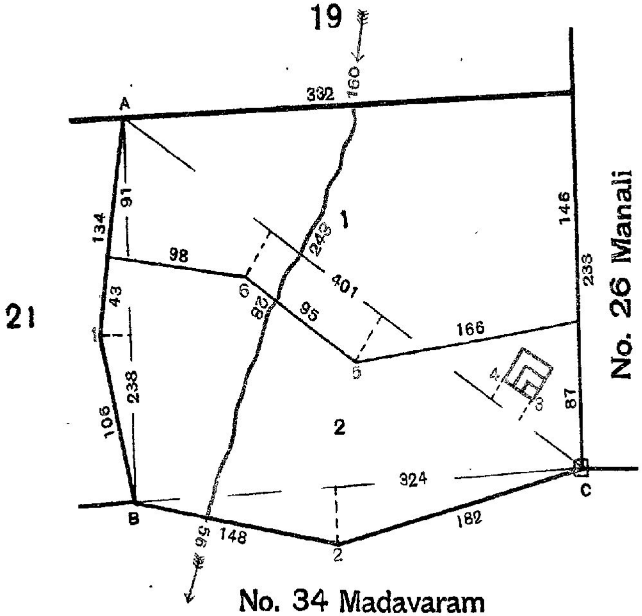
SPECIMEN FIELD PLAN

District Chingleput
Taluk Saidapet

Field No. 20

Village { No. 35
Name Mattur }

Area 0·85 Acres



		A		
		401		
6	34	272		
5	33	177		
		81	15	4
		55	16	3
		C		
		324		
		145	36	2
		B		
		238		
		133	20	1
		A		

Scale 1 Inch = 1 Chain.

S. Narayana Ayyar,

Head Surveyor,

7-6-06

A. Gopalan,

Field Surveyor,

12-5-06

43	△	Theodolite station.	Town survey
44	○	Chian survey stone.	Town survey
45	□	Field Stone.	Town survey
46		Rock mark.	
47	●	Forest cairn or pillar.	
48	———	Village boundary.	
49	·——	Survey field boundary.	

SURVEY MANUAL CHAP. IX, RULE 43.]

APPENDIX No. VII,

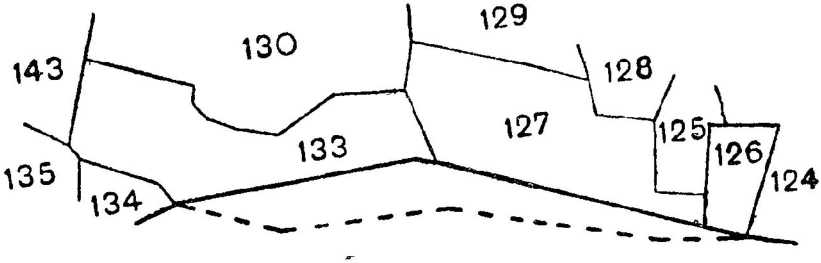
TABLE OF REPRESENTATIVE FRACTIONS.

Scale.	Representative fraction.	Scale.	Representative fraction.
1 inch = 128 miles	$\frac{1}{8,110,080}$	2 inches = 1 mile	$\frac{1}{31,680}$
1 inch = 69 miles	$\frac{1}{6,082,560}$	3 inches = 1 mile	$\frac{1}{21,120}$
1 inch = 80 miles	$\frac{1}{5,068,800}$	4 inches = 1 mile	$\frac{1}{15,840}$
1 inch = 64 miles	$\frac{1}{4,055,040}$	5 inches = 1 mile	$\frac{1}{12,672}$
1 inch = 48 miles	$\frac{1}{3,041,280}$	6 inches = 1 mile	$\frac{1}{10,560}$
1 inch = 32 miles	$\frac{1}{2,027,520}$	8 inches = 1 mile	$\frac{1}{7,920}$
1 inch = 24 miles	$\frac{1}{1,520,640}$	10 inches = 1 mile	$\frac{1}{6,386}$
1 inch = 16 miles	$\frac{1}{1,013,760}$	12 inches = 1 mile	$\frac{1}{5,280}$
1 inch = 12 miles	$\frac{1}{760,320}$	16 inches = 1 mile	$\frac{1}{3,960}$
1 inch = 10 miles	$\frac{1}{633,600}$	20 inches = 1 mile	$\frac{1}{3,168}$
1 inch = 8 miles	$\frac{1}{506,880}$	24 inches = 1 mile	$\frac{1}{2,640}$
1 inch = 6 miles	$\frac{1}{380,160}$	32 inches = 1 mile	$\frac{1}{1,980}$
1 inch = 5 miles	$\frac{1}{316,800}$	36 inches = 1 mile	$\frac{1}{1,760}$
1 inch = 4 miles	$\frac{1}{253,440}$	40 inches = 1 mile	$\frac{1}{1,584}$
1 inch = 3 miles	$\frac{1}{190,080}$	64 inches = 1 mile	$\frac{1}{990}$
1 inch = 2 miles	$\frac{1}{126,720}$	80 inches = 1 mile	$\frac{1}{792}$
1 inch = 1 miles	$\frac{1}{68,360}$	160 inches = 1 mile	$\frac{1}{396}$

APPENDIX No. VIII.

DELINEATION OF ALTERED RIVER BOUNDARY BETWEEN GOVERNMENT AND NON-GOVERNMENT VILLAGES.

No. 22 DEVAGUDUR GOVERNMENT VILLAGE



No. 23 RANGAPURAM AGRAHARAM

Scale 16 inches=1 mile.

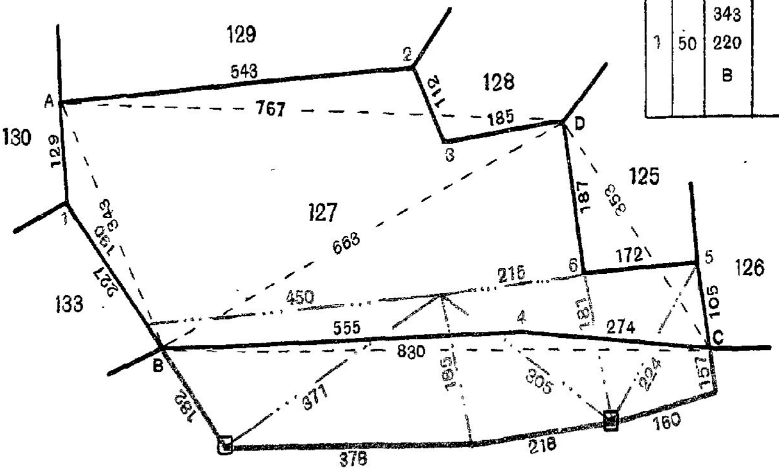
REFERENCE.

Existing boundary.

Original survey boundary washed away by river.

		D		
		353		
6	95	190		
		93	50	5
		C		
		830		
4	18	555		
		B		
		663		
		D		
		767		
		587	40	3
2	60	538		
		A		
		343		
1	50	220		
		B		

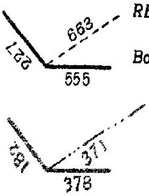
No. 22 DEVAGUDUR GOVERNMENT VILLAGE



No. 23 RANGAPURAM AGRAHARAM

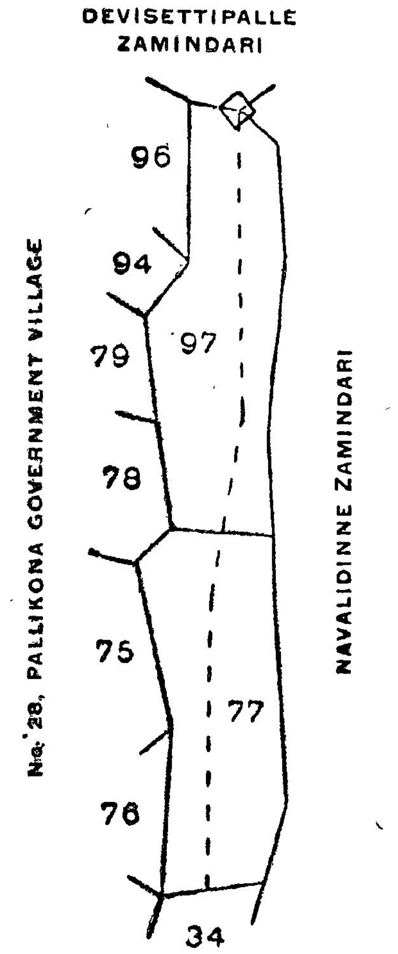
Scale 1 Inch = 2 Chains

REFERENCE



Boundary and measurements as per present survey

Do. do. original survey

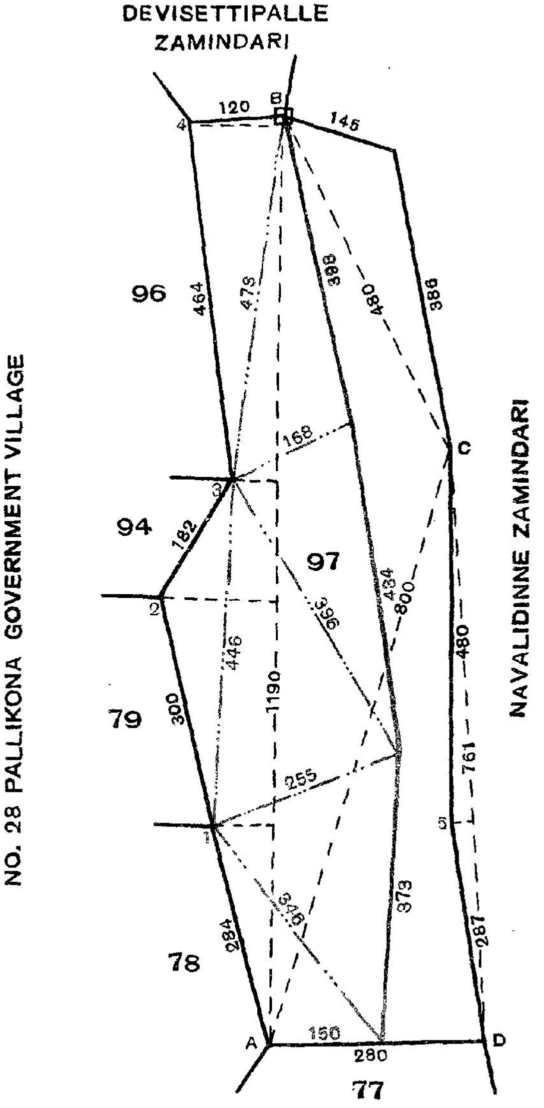


Scale 16 inches = 1 mile.

REFERENCE

Existing boundary.

Original survey boundary washed away by river.



		D		
		761		
		479	28	5
		C		
		480		
		B		
		1190		
4	115	1175		
3	57	720		
2	152	567		
1	83	275		
		A		
		800		
		C		

Scale 1 Inch = 2 Chains

REFERENCE

280 287 *Boundary and measurement as per present survey*

346 373 **Do.** *do.* *original survey*

Printed by Sri. K. SAMPATH, B.A.

SURVEY MANUAL; CHAP. XIII, RULE 168.]

APPENDIX No. IX.

A

TABLE FOR CONVERTING AREAS (CENTS) OBTAINED WITH THE COMPUTING SCALE TO SQUARE FEET.

Computing scale used—40 inches = 1 mile.

Scale of Map—40 inches = 1 mile, or 1 inch = 132 feet.

Cents.	Square feet.	Cents.	Square feet.	Cents.	Square feet.
·2	87	31	13,504	66	28,750
·4	174	32	13,939	67	29,185
·6	261	33	14,375	68	29,621
·8	348	34	14,810	69	30,056
1	436	35	15,246	70	30,492
2	871	36	15,682	71	30,928
3	1,307	37	16,117	72	31,363
4	1,742	38	16,553	73	31,799
5	2,178	39	16,988	74	32,234
6	2,614	40	17,424	75	32,670
7	3,049	41	17,860	76	33,106
8	3,485	42	18,295	77	33,541
9	3,920	43	18,731	78	33,977
10	4,356	44	19 166	79	34,412
11	4,792	45	19,602	80	34,848
12	5,227	46	20,038	81	35,284
13	5,663	47	20,473	82	35,719
14	6,098	48	20,909	83	36,155
15	6,534	49	21,344	84	36,590
16	6,970	50	21,780	85	37,026
17	7,405	51	22,216	86	37,462
18	7,841	52	22,651	87	37,897
19	8,276	53	23,087	88	38,333
20	8,712	54	23,522	89	38,768
21	9,148	55	23,958	90	39,204
22	9,583	56	24,394	91	39,640
23	10,019	57	24,829	92	40,075
24	10,454	58	25,265	93	40,511
25	10,890	59	25,700	94	40,946
26	11,326	60	26,136	95	41,382
27	11,761	61	26,572	96	41,818
28	12,197	62	27,007	97	42,253
29	12,632	63	27,443	98	42,689
30	13,068	64	27,878	99	43,124
		65	28,134	100	43,560

B

TABLE FOR CONVERTING AREAS (UNITS) OBTAINED WITH THE COMPUTING SCALE TO SQUARE FEET.

Computing scale used—16 inches = 1 mile.

Scale of Map—80 inches = 1 mile, or 1 inch = 66 feet.

Units.	Square feet.	Units.	Square feet.	Units,	Square feet.
1	17	41	714	81	1,411
2	35	42	732	82	1,429
3	52	43	749	83	1,446
4	70	44	767	84	1,464
5	87	45	784	85	1,481
6	105	46	802	86	1,499
7	122	47	819	87	1,516
8	139	48	836	88	1,533
9	157	49	854	89	1,551
10	174	50	871	90	1,568
11	191	51	888	91	1,585
12	209	52	906	92	1,603
13	226	53	923	93	1,620
14	244	54	941	94	1,638
15	261	55	958	95	1,655
16	279	56	976	96	1,673
17	296	57	993	97	1,690
18	313	58	1,010	98	1,707
19	331	59	1,028	99	1,725
20	348	60	1,045	100	1,742
21	365	61	1,062	200	3,485
22	383	62	1,080	300	5,227
23	400	63	1,097	400	6,970
24	418	64	1,115	500	8,712
25	435	65	1,132	600	10,454
26	453	66	1,150	700	12,197
27	470	67	1,167	800	13,939
28	487	68	1,184	900	15,682
29	505	69	1,202	1,000	17,424
30	523	70	1,220	2,000	34,848
31	540	71	1,237	3,000	52,272
32	558	72	1,255	4,000	69,696
33	575	73	1,272	5,000	87,120
34	593	74	1,290	6,000	104,544
35	610	75	1,307	7,000	121,968
36	628	76	1,325	8,000	139,392
37	645	77	1,342	9,000	156,816
38	662	78	1,359	10,000	174,240
39	680	79	1,377	11,000	191,664
40	697	80	1,394	12,000	209,088

C

TABLE FOR CONVERTING AREAS (UNITS) OBTAINED WITH THE COMPUTING SCALE TO SQUARE FEET.

Computing scale used—16 inches = 1 mile.

Scale of Map—160 inches = 1 mile, or 1 inch = 33 feet.

Units.	Square feet.	Units.	Square feet.	Units.	Square feet.
1	4	41	178	81	352
2	9	42	183	82	357
3	13	43	187	83	361
4	17	44	191	84	365
5	22	45	196	85	370
6	26	46	200	86	374
7	30	47	204	87	378
8	35	48	209	88	383
9	39	49	213	89	387
10	44	50	218	90	392
11	48	51	222	91	396
12	53	52	227	92	401
13	57	53	231	93	405
14	61	54	235	94	409
15	66	55	240	95	414
16	70	56	244	96	418
17	74	57	248	97	422
18	79	58	253	98	427
19	83	59	257	99	431
20	87	60	261	100	436
21	91	61	265	200	871
22	96	62	270	300	1,307
23	100	63	274	400	1,742
24	104	64	278	500	2,178
25	109	65	283	600	2,614
26	113	66	287	700	3,049
27	117	67	291	800	3,485
28	122	68	296	900	3,920
29	126	69	300	1,000	4,356
30	131	70	305	2,000	8,712
31	135	71	309	3,000	13,068
32	140	72	314	4,000	17,424
33	144	73	318	5,000	21,780
34	148	74	322	6,000	26,136
35	153	75	327	7,000	30,492
36	157	76	331	8,000	34,848
37	161	77	335	9,000	39,204
38	166	78	340	10,000	43,560
39	170	79	344	11,000	47,916
40	174	80	348	12,000	52,272

SURVEY MANUAL, CHAP. XIV, RULE 14.]

APPENDIX No. X.

EXTRACT FROM THE CODE OF CIVIL PROCEDURE ACT V OF 1908, SECTIONS GOVERNING THE PROCEEDINGS OF SURVEY OFFICERS UNDER MADRAS ACT VIII OF 1923.

(*a*) As to the Service of Summonses.

ORDER V.

* * * * *

9. (1) Where the defendant resides within the jurisdiction of the court in which the suit is instituted, or has an agent resident within that jurisdiction, who is empowered to accept the service of the summons, the summons shall, unless the court otherwise directs, be delivered or sent to the proper officer to be served by him or one of his subordinates.

(2) The proper officer may be an officer of a court other than that in which the suit is instituted, and, where he is such an officer, the summons may be sent to him by post or in such other manner as the court may direct.

10. Service of the summons shall be made by delivering or tendering a copy thereof signed by the judge or such officer as he appoints in this behalf, and sealed with the seal of the court.

11. Save as otherwise prescribed, where there are more defendants than one, service of the summons shall be made on each defendant.

12. Wherever it is practicable, service shall be made on the defendant in person, unless he has an agent empowered to accept service, in which case, service on such agent shall be sufficient.

* * * * *

15. Where in any suit the defendant cannot be found and has no agent empowered to accept service of the summons on his behalf, service may be made on any adult male member of the family of the defendant who is residing with him.

Explanation.—A servant is not a member of the family within the meaning of this rule.

16. Where the serving officer delivers or tenders a copy of the summons to the defendant personally, or to an agent or other person on his behalf, he shall require the signature of the person to whom the copy is so delivered or tendered, to an acknowledgment of service endorsed on the original summons.

17. Where the defendant or his agent or such other person as aforesaid refuses to sign the acknowledgment or where the serving officer, after using all due and reasonable diligence, cannot find the defendant, and there is no agent empowered to accept service of the summons on his behalf, nor any other person on whom service can be made, the serving officer shall affix a copy of the summons on the outer door or some other conspicuous part of the house in which the defendant ordinarily resides or carries on business or personally works for gain, and shall then return

the original to the court from which it was issued with a report endorsed thereon or annexed thereto, stating that he has so affixed the copy, the circumstances under which he did so, and the name and address of the person (if any) by whom the house was identified and in whose presence the copy was affixed.

18. The serving officer shall, in all cases in which the summons has been served under rule 16, endorse or annex, or cause to be endorsed or annexed, on or to the original summons, a return stating the time when, and the manner in which, the summons was served, and the name and address of the person (if any) identifying the person served, and witnessing the delivery or tender of the summons.

19. Where a summons is returned under rule 17, the court shall, if the return under that rule has not been verified by the affidavit of the serving officer, and may, if it has been so verified, examine the serving officer on oath, or cause him to be so examined by another court, touching his proceedings, and may make such further inquiry in the matter as it thinks fit, and shall either declare that the summons has been duly served or order such service as it thinks fit.

20. (1) Where the court is satisfied that there is reason to believe that the defendant is keeping out of the way for the purpose of avoiding service, or that for any other reason the summons cannot be served in the ordinary way, the court shall order the summons to be served by affixing a copy thereof in some conspicuous place in the court-house, and also upon some conspicuous part of the house (if any) in which the defendant is known to have last resided or carried on business or personally worked for gain, or in such other manner as the court thinks fit.

(2) Service substituted by order of the court shall be as effectual as if it had been made on the defendant personally.

(3) Where service is substituted by order of the court, the court shall fix such time for the appearance of the defendant as the case may require.

21. A summons may be sent by the court by which it is issued, whether within or without the province, either by one of its officers or by post to any court (not being the High Court) having jurisdiction in the place where the defendant resides.

* * * * *

23. The court to which a summons is sent under rule 21 shall, upon receipt thereof, proceed as if it had been issued by such court and shall then return the summons to the court of issue, together with the record (if any) of its proceedings with regard thereto.

24. Where the defendant is confined in a prison, the summons shall be delivered or sent by post or otherwise to the officer in charge of the prison for service on the defendant.

25. Where the defendant resides out of British India and has no agent in British India empowered to accept service, the summons shall be addressed to the defendant at the place where he is residing and sent to him by post, if there is postal communication between such place and the place where the court is situate.

26. Where—

(a) in the exercise of any foreign jurisdiction vested in His Majest or in the Governor-General in Councils, a Political Agent has bee

appointed, or a court has been established or continued, with power to serve a summons issued by a court under this code in any foreign territory in which the defendant resides, or

(*b*) the Governor-General in Council has, by notification in the *Gazette of India*, declared that any summons so issued may be served by any court situate in any such territory and not established or continued in the exercise of any such jurisdiction as aforesaid, the summons may be sent to such Political Agent or court, by post or otherwise, for the purpose of being served upon the defendant ; and, if the Political Agent or court returns the summons with an endorsement signed by such Political Agent or by the Judge or other officer of the court that the summons has been served on the defendant in manner herein before directed such endorsement shall be deemed to be evidence of service.

27. Where the defendant is a public Officer (not belonging to His Majesty's Military or Naval forces or His Majesty's Indian Marine Service), or is the servant of a railway company or local authority, the court may, if it appears to it that the summons may be most conveniently so served, send it for service, on the defendant to the head of the office in which he is employed, together with a copy to be retained by the defendant.

28. Where the defendant is a soldier, the court shall send the summons for service to his Commanding Officer together with a copy to be retained by the defendant.

29. (1) Where a summons is delivered or sent to any person for service under rule 24, rule 27 or rule 28, such person shall be bound to serve it, if possible and to return it under his signature, with the written acknowledgment of the defendant, and such signature shall be deemed to be evidence of service.

(2) Where, from any cause, service is impossible, the summons shall be returned to the court with a full statement of such cause and of the steps taken to procure service, and such statement shall be deemed to be evidence of non-service.

30. (1) The court may, notwithstanding anything hereinbefore contained, substitute for a summons a letter signed by the Judge or such officer as he may appoint in this behalf, where the defendant is, in the opinion of the court, of a rank entitling him to such mark of consideration.

(2) A letter substituted under sub-rule (1) shall contain all the particulars required to be stated in a summons, and, subject to the provisions of sub-rule (3), shall be treated in all respects as a summons.

(3) A letter so substituted may be sent to the defendant by post or by a special messenger selected by the court, or in any other manner which the court thinks fit ; and where the defendant has an agent empowered to accept service, the letter may be delivered or sent to such agent.

(*b*) As to Summoning Parties and Witnesses and Enforcing their Attendance.

ORDER V.

1. (1) When a suit has been duly instituted, a summons may be issued to the defendant to appear and answer the claim on a day to be therein specified :

Provided that no such summons shall be issued when the defendant has appeared at the presentation of the plaint and admitted the plaintiff's claim.

(2) A defendant to whom a summons has been issued under sub-rule (1) may appear

(*a*) in person, or

(*b*) by a pleader duly instructed and able to answer all material questions relating to the suit, or

(*c*) by a pleader accompanied by some person able to answer all such questions.

(3) Every such summons shall be signed by the Judge or such officer as he appoints, and shall be sealed with the seal of the court.

*   *   *   *   *

3. (1) Where the court sees reason to require the personal appearance of the defendant, the summons shall order him to appear in person in court on the day therein specified.

(2) Where the court sees reason to require the personal appearance of the plaintiff on the same day, it shall make an order for such appearance.

4. No party shall be ordered to appear in person unless he resides—

(*a*) within the local limits of the courts' ordinary original jurisdiction, or

(*b*) without such limits but at a place less than fifty or (where there is railway or steamer communication or other established public conveyance for five-sixths of the distance between the place where he resides and the place where the court is situate) less than two hundred miles distance from the court-house.

*   *   *   *   *

6. The day for the appearance of the defendant shall be fixed with reference to the current business of the court, the place of residence of the defendant and the time necessary for the service of the summons; and the day shall be so fixed as to allow the defendant sufficient time to enable him to appear and answer on such day.

*   *   *   *   *

ORDER IX.

Appearance of parties and consequence of non-appearance.

1. On the day fixed in the summons for the defendant to appear and answer, the parties shall be in attendance at the court-house in person or by their respective pleaders, and the suit shall then be heard, unless the hearing is adjourned to a future day fixed by the court.

*   *   *   *   *

3. Where neither party appears when the suit is called on for hearing, the court may make an order that the suit be dismissed.

4. Where a suit is dismissed under rule 21 or rule 3, the plaintiff may (subject to the law of limitation) bring a fresh suit; or may apply for an order to set the dismissal aside, and if he satisfies the court that the court-fee and postal charges (if any) required within the time fixed before the issue of the summons or for his non-appearance, as the case may

be, the court shall make an order setting aside the dismissal and shall appoint a day for proceeding with the suit.

* * * * *

6. (1) Where the plaintiff appears and the defendant does not appear when the suit is called on for hearing, then—

(*a*) if it is proved that the summons was duly served, the court may proceed *ex parte* ;

(*b*) if it is not proved that the summons was duly served, the court shall direct a second summons to be issued and served on the defendant ;

(*c*) if it is proved that the summons was served on the defendant but not in sufficient time to enable him to appear and answer on the day fixed in the summons, the court shall postpone the hearing of the suit to a future day to be fixed by the court, and shall direct notice of such day to be given to the defendant.

(2) Where it is owing to the plaintiff's default that the summons was not duly served or was not served in sufficient time, the court shall order the plaintiff to pay the costs occasioned by the postponement.

7. Where the court has adjourned the hearing of the suit *ex parte* and the defendant, at or before such hearing, appears and assigns good cause for his previous non-appearance, he may, upon such terms as the court directs as to costs or otherwise, be heard in answer to the suit, as i he had appeared on the day fixed for his appearance.

8. Where the defendant appears and the plaintiff does not appear when the suit is called on for hearing, the court shall make on order that the suit be dismissed, unless the defendant admits the claim, or part thereof, in which case the court shall pass a decree against the defendant upon such admission, and, where part only of the claim has been admitted, shall dismiss the suit so far as it relates to the remainder.

9. (1) Where a suit is wholly or partly dismissed under rule 8, the plaintiff should be precluded from bringing a fresh suit in respect of the same cause of action. But he may apply for an order to set the dismissal aside, and if he satisfies the court that there was sufficient cause for his non-appearance when the suit was called for hearing, the court shall make an order setting aside the dismissal upon such terms as to costs or otherwise as it thinks fit, and shall appoint a day for proceeding with the suit.

(2) No order shall be made under this rule unless notice of the application has been served on the opposite party.

10. Where there are more plaintiffs than one, and one or more of them appear, and the others do not appear, the court may, at the instance of the plaintiff or plaintiffs appearing, permit the suit to proceed in the same way as if all the plaintiffs had appeared, or make such order as it thinks fit.

11. Where there are more defendants than one, and one or more of them appear and the others do not appear, the suit shall proceed, and the court shall at the time of pronouncing judgment, make such order as it thinks fit with respect to the defendants who do not appear.

12. Where a plaintiff or defendant, who has been ordered to appear in person, does not appear in person, or show sufficient cause to the satisfaction of the court for failing so to appear, he shall be subject to all the provisions of the foregoing rules applicable to plaintiffs and defendants, respectively, who do not appear.

Setting aside decrees ex parte.

13. In any case in which a decree is passed *ex parte* against a defendant, he may apply to the court by which the decree was passed for an order to set it aside; and if he satisfies the court that the summons was not duly served, or that he was prevented by any sufficient cause from appearing when the suit was called on for hearing, the court shall make an order setting aside the decree as against him upon such terms as to costs, payment into court or otherwise as it thinks fit, and shall appoint a day for proceeding with the suit:

Provided that, where the decree is of such a nature that it cannot be set aside as against such defendant only, it may be set aside as against all or any of the other defendants also.

14. No decree shall be set aside on any such application as aforesaid unless notice thereof has been served on the opposite party.

* * * * *

ORDER XVI.

Summoning and attendance of witnesses.

1. At any time after the suit is instituted, the parties may obtain, on application to the court or to such officer as it appoints in this behalf, summonses to persons whose attendance is required either to give evidence or to produce documents.

2. (1) The party applying for a summons shall, before the summons is granted and within a period to be fixed, pay into court such a sum of money as appears to the court to be sufficient to defray the travelling and other expenses of the person summoned, in passing to and from the court in which he is required to attend, and for one day's attendance.

(2) In determining the amount payable under this rule, the court may, in the case of any person summoned to give evidence as an expert, allow reasonable remuneration for the time occupied both in giving evidence and in performing any work of an expert character necessary for the case.

(3) Where the court is subordinate to a High Court, regard shall be had, in fixing the scale of such expenses, to any rules made in that behalf.

3. The sum so paid into court shall be tendered to the person summoned, at the time of serving the summons, if it can be served personally.

4. (1) Where it appears to the court or to such officer as it appoints in this behalf that the sum paid into court is not sufficient to cover such expenses or reasonable remuneration, the court may direct such further sum to be paid to the person summoned as appears to be necessary on that account, and, in case of default in payment, may order such sum to

be levied by attachment and sale of the movable property of the party obtaining the summons ; or the court may discharge the person summoned without requiring him to give evidence ; or may both order such levy and discharge such person as aforesaid.

(2) Where it is necessary to detain the person summoned for a longer period than one day, the court may, from time to time, order the party, at whose instance he was summoned, to pay into court such sum as is sufficient to defray the expenses of his detention for such further period, and, in default of such deposit being made, may order such sum to be levied by attachment and sale of the movable property of such party ; or the court may discharge the person summoned without requiring him to give evidence ; or may both order such levy and discharge such person as aforesaid.

5. Every summons for the attendance of a person to give evidence or to produce a document shall specify the time and place at which he is required to attend, and also whether his attendance is required for the purpose of giving evidence or to produce a document, or for both purposes ; and any particular document, which the person summoned is called on to produce, shall be described in the summons with reasonable accuracy.

* * * * *

7. Any person present in court may be required by the court to give evidence or to produce any document then and there in his possession or power.

8. Every summons under this order shall be served as nearly as may be in the same manner as a summons to a defendant, and the rules in order V as to proof of service shall apply in the case of all summonses served under this rule.

9. Service shall in all cases be made a sufficient time before the time specified in the summons for the attendance of the person summoned, to allow him a reasonable time for preparation and for travelling to the place at which his attendance is required.

10. (1) Where a person, to whom a summons has been issued either to attend to give evidence or to produce a document, fails to attend or to produce the document in compliance with such summons, the court shall, if the certificate of the serving officer has not been verified by affidavit, and may, if it has been so verified, examine the serving officer on oath, or cause him to be so examined by another court, touching the service or non-service of the summons.

(2) Where the court sees reason to believe that such evidence or production is material, and that such person has, without lawful excuse, failed to attend or to produce the document in compliance with such summons or has intentionally avoided service, it may issue a proclamation requiring him to attend to give evidence or to produce the document at a time and place to be named therein ; and a copy of such proclamation shall be affixed on the outer door or other conspicuous part of the house in which he ordinarily resides.

(3) In lieu of or at the time of issuing such proclamation, or at any time afterwards, the court may, in its discretion, issue a warrant, either with or without bail, for the arrest of such person, and may make an

order for the attachment of his property to such amount as it thinks fit not exceeding the amount of costs of attachment and of any fine which may be imposed under rule 12 :

Provided that no Court of Small Causes shall make an order for the attachment of immoveable property.

11. Where, at any time after the attachment of his property and person appears and satisfies the court,—

(*a*) that he did not, without lawful excuse, fail to comply with the summons or intentionally avoid service, and

(*b*) where he has failed to attend at the time and place named in a proclamation issued under the last proceeding rule, that he had no notice of such proclamation in time to attend,

the court shall direct that the property be released from attachment, and shall make such order as to the costs of the attachement as it thinks fit.

12. The court may, where such person does not appear, or appears but fails so to satisfy the court, impose upon him such fine not exceeding five hundred rupees as it thinks fit, having regard to his condition in life and all the circumstances of the case, and may order his property or any part thereof, to be attached and sold or, if already attached under rule 10, to be sold for the purpose of satisfying all costs of such attachment, together with the amount of the said fine, if any :

Provided that, if the person whose attendance is required, pays into court the costs and fine aforesaid, the court shall order the property to be released from attachment.

13. The provisions with regard to the attachment and sale of property in the execution of a decree shall, so far as they are applicable, be deemed to apply to any attachment and sale under this order as if the person whose property is so attached were a judgment-debtor.

14. Subject to the provisions of this code as to attendance and appearance and to any law for the time being in force, where the court at any time thinks it necessary to examine any person other than a party to the suit and not called as a witness by a party to the suit, the court may, of its own motion, cause such person to be summoned as a witness to give evidence, or to produce any document in his possession, on a day to be appointed, and may examine him as a witness or require him to produce such document.

15. Subject as last aforesaid, whoever is summoned to appear and give evidence in a suit shall attend at the time and place named in the summons for that purpose, and whoever is summoned to produce a document shall either attend to produce it, or cause it to be produced, at such time and place.

16. (1) A person so summoned and attending shall, unless the court otherwise directs, attend at each hearing until the suit has been disposed of.

(2) On the application of either party and the payment through the court of all necessary expenses (if any), the court may require any person so summoned and attending to furnish security to attend at the next or any other hearing or until the suit is disposed of and, in default of his furnishing such security, may order him to be detained in the civil prison.

17. The provisions of rules 10 to 13 shall, so far as they are applicable, be deemed to apply to any person who having attended in compliance with a summons departs, without lawful excuse, in contravention of rule 16.

18. Where any person arrested under a warrant is brought before the court in custody and cannot, owing to the absence of the parties or any of them, give the evidence or produce the document which he has been summoned to give or produce, the court may require him to give reasonable bail or other security for his appearance at such time and place as it thinks fit, and, on such bail or security being given, may release him, and in default of his giving such bail or security, may order him to be detained in the civil prison.

19. No one shall be ordered to attend in person to give evidence unless he resides—

(*a*) within the local limits of the court's ordinary original jurisdiction, or

(*b*) without such limits but at a place less than fifty or (where there is railway or steamer communication or other established public conveyance for five-sixths of the distance between the place where he resides and the place where the court is situate) less than two hundred miles distance from the court-house.

20. Where any party to a suit present in court refuses, without lawful excuse, when required by the court, to give evidence or to produce any document then and there in his possession or power, the court may pronounce judgment against him or make such order in relation to the suit as it thinks fit.

21. Where any party to a suit is required to give evidence or to produce a document, the provisions as to witnesses shall apply to him so far as they are applicable.

* * * * *

(*c*) As to the Examination of Parties and Witnesses.

ORDER XVIII.

1. The plaintiff has the right to begin unless the defendant admits the facts alleged by the plaintiff and contends that either in point of law or on some additional facts alleged by the defendant the plaintiff is not entitled to any part of the relief which he seeks, in which case the defendant has the right to begin.

2. (1) On the day fixed for the hearing of the suit or on any other day to which the hearing is adjourned, the party having the right to begin shall state his case and produce his evidence in support of the issues which he is bound to prove.

(2) The other party shall then state his case and produce his evidence (if any) and may then address the court generally on the whole case.

(3) The party beginning may then reply generally on the whole case.

* * * * *

4. The evidence of the witnesses in attendance shall be taken orally in open court in the presence and under the personal direction and superintendence of the judge.

* * * * *

6. Where the evidence is taken down in a language different from that in which it is given, and the witness does not understand the language in which it is taken down, the evidence as taken down in writing shall be interpreted to him in the language in which it is given.

* * * * *

8. Where the evidence is not taken down in writing by the judge, he shall be bound, as the examination of each witness proceeds, to make a memorandum of the substance of what each witness deposes, and such memorandum shall be written and signed by the judge and shall form part of the record.

9. Where English is not the language of the court, but all the parties to the suit who appear in person, and the pleaders of such as appear by pleaders, do not object to have such evidence as is given in English taken down in English, the judge may so take it down.

10. The court may, of its own motion or on the application of any party or his pleader, take down any particular question and answer, or any objection to any question, if there appears to be any special reason for so doing.

11. Where any question put to a witness is objected to by a party or his pleader, and the court allows the same to be put, the judge shall take down the question, the answer, the objection and the name of the person making it, together with the decision of the court thereon.

12. The court may record such remarks as it thinks material respecting the demeanour of any witness while under examination.

* * * * *

15. (1) Where a judge is prevented by death, transfer or other cause from concluding the trial of a suit, his successor may deal with any evidence or memorandum taken down or made under the foregoing rules as if such evidence or memorandum had been taken down or made by him or under his direction under the said rules and may proceed with the suit from the stage at which his predecessor left it.

* * * * *

16. (1) Where a witness is about to leave the jurisdiction of the court, or other sufficient cause is shown to the satisfaction of the court why his evidence should be taken immediately, the court may, upon the application of any party or of the witness, at any time after the institution of the suit, take the evidence of such witness in manner herein before provided.

(2) Where such evidence is not taken forthwith and in the presence of the parties, such notice as the court thinks sufficient, of the day fixed for the examination, shall be given to the parties.

(3) The evidence so taken shall be read over to the witness, and , if he admits it to be correct, shall be signed by him, and the judge shall, if necessary, correct the same, and shall sign it, and it may then be read at any hearing of the suit.

17. The court may at any stage of a suit recall any witness who has been examined and may (subject to the law of evidence for the time being in force) put such questions to him as the court thinks fit.

18. The court may at any stage of a suit inspect any property or thing concerning which any question may arise.

* * * *

ORDER XXVI.

Commissions to examine witnesses.

1. Any court may in any suit issue a commission for the examination on interrogatories or otherwise of any person resident within the local limits of its jurisdiction who is exempted under this code from attending the court or who is from sickness or infirmity unable to attend it.

2. An order for the issue of a commission for the examination of a witness may be made by the court either of its own motion or on the application, supported by affidavit or otherwise, of any party to the suit or of the witness to be examined.

3. A commission for the examination of a person who resides within the local limits of the jurisdiction of the court issuing the same may be issued to any person whom the court thinks fit to execute it.

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(*d*) **As to the Production of documents.**

ORDER V.

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7. The summons to appear and answer shall order the defendant to produce all documents in his possession or power upon which he intends to rely in support of his case.

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ORDER XI.

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12. Any party may without filing an affidavit, apply to the court for an order directing any other party to any suit to make discovery on oath of the documents, which are or have been in his possession or power, relating to any matter in question therein. On the hearing of such application, the court may either refuse or adjourn the same, if satisfied that such discovery is not necessary or not necessary that stage of the suit or make such order, either generally or limited to certain classes of documents as may, in its discretion, be thought fit. Provided that discovery shall not be ordered when and so far as the court shall be of opinion that it is not necessary either for disposing fairly of the suit or for saving costs.

13. The affidavit to be made by a party against whom such order as it mentioned in the last preceding rule has been made, shall specify which (if any) of the documents therein mentioned the objects to produce and it shall be in form No. 5 in appendix C with such variations as circumstances may require.

14. It shall be lawful for the court at any time during the pendency of any suit to order the production by any party thereto, upon oath, of such of the documents in his possession or power, relating to any matter in question in such suit as the court shall think right; and the court deal with such documents, when produced, in such manner as shall appear just.

15. Every party to a suit shall be entitled at any time to give notice to any other party in whose pleadings or affidavits reference is made to any document, to produce such document for the inspection of the party giving such notice or of his pleader, and to permit him or them to take copies thereof; and any party not complying with such notice shall not afterwards be at liberty to put any such document in evidence on his behalf in such suit unless he shall satisfy the court that such document relates only to his own title, he being a defendant to the suit, or that he had some other cause or excuse which the court shall deem sufficient for not complying with such notice, in which case the court may allow the same to be put in evidence on such terms as to costs and otherwise as the court shall think fit.

* * * * *

17. The party, to whom such notice is given, shall, within ten days from the receipt of such notice, deliver to the party, giving the same a notice stating a time within three days from the delivery thereof at which the documents or such of them as he does not object to produce, may be inspected at the office of his pleader, or in the case of bankers, books, or other books of account or books in constant use for the purposes of any trade or business, at their usual place of custody, and stating which (if any) of the documents he objects to produce, and on what ground. Such notice shall be in form No. 8 in appendix C, with such variations as circumstances may require.

18. (1) Where the party served with notice under rule 15 omits to give such notice of a time for inspection or objects to give inspection or offers inspection elsewhere than at the office of his pleader, the court may, on the application of the party desiring it, make an order for inspection in such place and in such manner as it may think fit: provided that the order shall not be made when and so far as the court shall be of opinion that it is not necessary either for disposing fairly of the suit or for saving costs.

(2) Any application to inspect documents, except such as are referred to in the pleadings, particulars or affidavits of the party against whom the application is made or disclosed in his affidavit of documents, shall be founded upon an affidavit showing of what documents inspection is sought, that the party applying is entitled to inspect them, and that they are in the possession or power of the other party. The court shall not make such order for inspection of such documents when and so far as the court shall be of opinion that it is not necessary either for disposing fairly of the suit or for saving costs.

19. (1) Where inspection of any business books is applied for, the court may, if it thinks fit, instead of ordering inspection of the original books, order a copy of any entries therein to be furnished and verified by the

affidavit of some person who has examined the copy with the original entries, and such affidavit shall state whether or not there are in the original book any and what erasures, interlineations, or alterations, provided that notwithstanding that such copy has been supplied, the court may order inspection of the book from which the copy was made.

(2) Where on an application for an order for inspection, privilege is claimed for any document, it shall be lawful for the court to inspect the document for the purpose of deciding as to the validity of the claim of privilege.

(3) The court may, on the application of any party to a suit at any time, and whether an affidavit of documents shall or shall not have already been ordered or made, make an order requiring any other party to state by affidavit whether any one or more specific documents, to be specified in the application, is or are, has or have at any time been, in his possession or power and, if not then in his possession, when he parted with the same and what has become thereof. Such application shall be made on an affidavit stating that in the belief of the deponent, the party against whom the application is made has, or has at some time had, in his possession or power the document or documents specified in the application and that they relate to the matters in question in the suit or to some of them.

20. Where the party from whom discovery of any kind or inspection is sought, objects to the same or any part thereof, the court may, if satisfied that the right to the discovery or inspection sought depends on the determination of any issue or question in dispute in the suit, or that for any other reason it is desirable that any issue or question in dispute in the suit should be determined before deciding upon the right to the discovery or inspection, order that such issue or question be determined first, and reserve the question as to the discovery or inspection.

21. Where any party fails to comply with any order to answer interrogatories or for discovery or inspection of documents, he shall, if a plaintiff, be liable to have his suit dismissed for want of prosecution and, if a defendant, to have his defence, if any, struck out, and to be placed in the same position as if he had not defended, and the party interrogating or seeking discovery or inspection may apply to the court for an order to that effect, and an order may be made accordingly.

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ORDER XII.

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Admissions.

2. Either party may call upon the other party to admit any document, saving all just exceptions and in case of refusal or neglect to admit, after such notice, the costs of proving any such document shall be paid by the party so neglecting or refusing, whatever the result of the suit may be, unless the court otherwise directs ; and no cost of proving any document shall be allowed, unless such notice is given, except where the omission to give the notice is, in the opinion of the court, a saving of expense.

* * * * *

ORDER XIII.

Production, impounding and return of documents.

1. (1) The parties or their pleaders shall produce, at the first hearing of the suit, all the documentary evidence of every description in their possession or power on which they intend to rely and which has not already been filed in court, and all documents which the court has ordered to be produced.

(2) The court shall receive the documents so produced, provided that they are accompanied by an accurate list thereof prepared in such form as the High Court directs.

2. No documentary evidence in the possession or power of any party, which should have been but has not been produced in accordance with the requirements of rule 1, shall be received at any subsequent stage of the proceedings unless good cause is shown to the satisfaction of the court for the non-production thereof: and the court receiving any such evidence shall record the reasons for so doing.

3. The court may at any stage of the suit reject any documents which it considers irrelevant or otherwise inadmissible recording the grounds or such rejection.

4. (1) Subject to the provisions of the next following sub-rule, there shall be endorsed on every document which has been admitted in evidence in the suit the following particulars:—

(*a*) the number and title of the suit,

(*b*) the name of the person producing the document,

(*c*) the date on which it was produced, and

(*d*) a statement of its having been so admitted:

and the endorsement shall be signed or initialled by the judge.

(2) Where a document so admitted is an entry in a book account or record, and a copy thereof has been substituted for the original under the next following rule, the particulars aforesaid shall be endorsed on the copy and the endorsement thereon shall be signed or initialled by the Judge.

5. (1) Save in so far as is otherwise provided by the Banker's Books Evidence Act, 1891, where a document admitted in evidence in the suit is an entry in a letter book or a shop book or other account in current use, the party on whose behalf the book or account is produced may furnish a copy of the entry.

(2) Where such a document is an entry in a public record produced from a public office or by a public officer, or an entry in a book or account belonging to a person other than a party on whose behalf the book or account is produced, the court may require a copy of the entry to be furnished.

(*a*) Where the record, book or account is produced on behalf of a party, then by that party, or

(*b*) Where the record, book or account is produced in obedience to an order of the court acting of its own motion, then by either or any party.

(3) Where a copy of an entry is furnished under the forgoing provisions of this rule, the court shall after causing the copy to be examined, compared and certified in manner mentioned in rule 17 of Order VII,* mark the entry and cause the book, account or record in which it occurs to be returned to the person producing it.

6. Where a document relied on as evidence by either party is considered by the court to be inadmissible in evidence, there shall be endorsed thereon the particulars mentioned in clauses (*a*) (*b*) and (*c*) of rule, 4, sub-rule (1) together with a statement of its having been rejected, and the endorsement shall be signed or initialled by the Judge.

7. (1) Every document which has been admitted in evidence or a copy thereof where a copy has been substituted for the original under rule 5 shall form part of the record of the suit.

(2) Documents not admitted in evidence shall not form part of the record and shall be returned to the persons respectively producing them.

8. Notwithstanding anything contained in rule 5 or rule 7 of this order or in rule 17 of Order VII,* the court may, if it seems sufficient cause direct any document or book produced before it in any suit to be impounded and kept in the custody of an officer of the court, for such period and subject to such conditions as the court thinks fit.

9. (1) Any person, whether a party to the suit or not desirous of receiving back any document produced by him in the suit and placed on the record shall, unless the document is impounded under rule 8, be entitled to receive back the same.

(*a*) Where the suit is one in which an appeal is not allowed when the suit has been disposed of, and

(*b*) where the suit is one in which an appeal is allowed, when the court is satisfied that the time for preferring an appeal has elapsed and that no appeal has been preferred or if an appeal has been preferred, when the appeal has been disposed of:

Provided that a document may be returned at any time earlier than that prescribed by this rule, if the person applying therefor delivers to the proper officer a certified copy to be substituted for the original undertakes to produce the original if required to do so:

Provided also that no document shall be returned which, by force of the decree has become wholly void or useless.

(2) On the return of a document admitted in evidence a, receipt shall be given by the person receiving it.

10. (1) The court may of its own motion, and may in its discretion upon the application of any of the parties to a suit, send for either from its own records or from any other court, the record of any other suit or proceeding and inspect the same.

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* Order VII, Rule 17.—(1) Save in so far as is otherwise provided by the Bankers' Books Evidence Act, 1891, where the document on which the plaintiff sues is an entry in a shop-book or other account in his possession or power, the plaintiff shall produce the book or account at the time of filing the plant, together with a copy of the entry on which he relies.

(2) The court or such officer as it appoints in this behalf, shall forthwith mark the document for the purpose of identification; and, after examining and comparing the copy with the original, shall, if it is found correct certify it to be so and return the book to the plaintiff and cause the copy to be filed.

(2) Every application made under this rule shall (unless the Court otherwise directs) be supported by an affidavit showing how the record is material to the suit in which the application is made, and that the applicant cannot without unreasonable delay or expense obtain a duly authenticated copy of the record or of such portion thereof as the applicant requires, or that the production of the original is necessary for the purposes of justice.

(3) Nothing contained in this rule shall be deemed to enable the court to use in evidence any document which under the law of evidence would be inadmissible in the suit.

11. The provisions herein contained as to documents shall, so far as may be, apply to all other material objects producible as evidence.

ORDER XVI.

Summoning and Attendance of Witnesses.

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6. Any person may be summoned to produce a document without being summoned to give evidence; and any person summoned merely to produce a document shall be deemed to have complied with the summons if he causes such document to be produced instead of attending personally to produce the same.

ORDER XLI.

Appeals from Original Decrees.

* * * *

12. (2) Such day shall be fixed with reference to the current business of the Court, the place of residence of the respondent, and the time necessary for the service of the notice of appeal so as to allow the respondent sufficient time to appear and answer the appeal on such day.

* * * *

14. (1) Notice of the day fixed under rule 12 shall be affixed in the Appellate Court-house, and a like notice shall be sent by the Appellate Court to the Court from whose decree the appeal is preferred and shall be served on the respondent or on his pleader in the Appellate Court in the manner provided for the service on a defendant of a summons to appear and answer; and all the provisions applicable to such summons, and to proceedings with reference to the service thereof, shall apply to the service of such notice.

(2) Instead of sending the notice to the Court from whose decree the appeal is preferred, the Appellate Court may itself cause the notice to be served on the respondent or his pleader under the provisions above referred to.

15. The notice to the respondent shall declare that, if he does not appear in the Appellate Court on the day so fixed, the appeal will be heard *ex parte*.

16. (1) On the day fixed, or on any other day to which the hearing may be adjourned, the appellant should be heard in support of the appeal.

(2) The Court shall then, if it does not dismiss the appeal at once, hear the respondent against the appeal, and in such case the appellant shall be entitled to reply.

17. (1) Where on the day fixed, or on any other day to which the hearing may be adjourned, the appellant does not appear when the appeal is called on for hearing, the Court may make an order that the appeal be dismissed.

(2) Where the appellant appears and the respondent does not appear the appeal shall be heard *ex parte*.

* * * *

19. Where an appeal is dismissed under rule 11, sub-rule (2), or rule 17 or rule 18, the appellant may apply to the Appellate Court for the re-admission of the appeal; and, where it is proved that he was prevented by any sufficient cause from appearing when the appeal was called on for hearing or from depositing the sum so required, the Court shall re-admit the appeal on such terms as to costs or otherwise as it thinks fit.

* * * *

21. Where an appeal is heard *ex parte* and judgment is pronounced against the respondent, he may apply to the Appellate Court to re-hear the appeal; and if he satisfies the Court that the notice was not duly served or that he was prevented by sufficient cause from appearing when the appeal was called on for hearing, the Court shall re-hear the appeal on such terms as to costs or otherwise as it thinks fit to impose upon him.

APPENDIX XI.

APPOINTMENT AND TRAINING OF UPPER SUBORDINATES.

Appointments are made by the Director to the grade of head surveyor by selection from graduates, preference being given to those whose optional subject was mathematics, whose physique is good and who have taken an active part in out-door games.

The men selected are appointed as probationers and will be confirmed as opportunities arise, if they complete the training course satisfactorily and pass the departmental examinations, provided they are declared medically fit for Government service.

A probationer will have to sign the following agreement before being allowed to join his probationery appointment :—

AGREEMENT.

KNOW all men by these presents that I of am found to the Right Honourable the Secretary of State for India in Council in the sum of Rs. to be paid to the said Secretary of State or to his certain Attorney, successors or assigns for which payment I bind myself, my executors and administrators by these presents sealed with my seal, dated this day of 19 .

Whereas the above bounden has entered the Madras Survey department as a candidate for training in survey at the expense of Government in view to being employed as an upper subordinate in field in the said department, and whereas it has been agreed that the above bounden shall enter into a bond in the abovementioned sum of Rs. with such condition as is hereunder written.

Now the condition of the above written bond is such that the bond shall be void, if the said shall go through the full course of training prescribed by the Director of Survey, Madras, and shall, on completion of such training, also serve in the said department for a period of 3 years, and shall, during such course of training and the said period of 3 years, abide by all the departmental rules and regulations, or, if he is prevented by ill-health from going through such full course of training and the said period of 3 years' service thereafter or if during the trial period of the first two months it appears to the Director that he is not likely to prove an efficient surveyor and is in consequence required to leave the training class, provided the rejection was not due to moral delinquency. Otherwise, the bond shall remain in full force.

Signed, sealed and delivered by the abovenamed
in the presence of

Witnesses :—
1.
2.

SURVEY OFFICE, MADRAS,
19 .

Signature.

The course is as follows :—

SYLLABUS FOR THE TRAINING OF PROBATIONARY UPPER SUBORDINATES.

First Part.

Two weeks. (1) Preliminary instructions in the use of the chain and cross staff, demarcation, field survey, 16″ and 40″ area computation and preparation of simple and diagonal scales.

This instruction should be given by a sub-assistant or section officer.

Four months. (2) For the first fortnight the probationer will go out to field with a competent surveyor, and during the second fortnight when he will be working independently, the range deputy surveyor must assist him. Thereafter he must work without assistance. After two months he should realize the outturn of a surveyor on Rs. 22–8–0, and this course will be extended if necessary until he is able to do so.

N.B.—On completion of this course, the officer in charge should submit a report on the probationer's progress showing the outtern realized.

Two weeks. (3) Accompanying the sub-assistant or section officer during inspection and preparing reports for the work inspected.

Two months. (4) Holding charge of a deputy surveyor's range. This period is to be extended unless the sub-assistant or section officer is satisfied that the probationer is thoroughly conversant with all the duties of a range deputy surveyor, that he has learnt to control his surveyors and to keep work progressing smoothly. It must be impressed on the probationer that it is the business of a range deputy surveyor (and of those of higher rank) to make the conditions of work easy for his surveyors, to help them to get coolies, accommodation, etc.

N.B.—On completion of this course' the officer in charge should submit a report on the probationer's progress.

Two months. (5) Instruction in the use of the theodolite, including the temporary and permanent adjustments, traverse computation, azimuth observation and computation, subtence bar work, traverse plotting and protractor plotting. Plotting of fields in the 16″ map and the use of the Computing scale. The computation and subsequent processes should be taught in the Party office.

Two weeks. (6) A work independently.

Two months. (7) Original as a B surveyor. The period will be extended if necessary until the probationer is able to do the outtern expected from a B surveyor. He must take at least four azimuths, work them out and connect one G.T.S.

Total time required under ordinary circumstances is **11½ months** or 12 months with transfers.

The officer in charge should submit a confidential report on completion of the training specified above giving his opinion with full reasons as to whether the probationer is likely to make a useful upper subordinate.

When this training has been completed satisfactorily, the probationer will be promoted to the scale Rs. 75—5—125, until then he will draw Rs. 60 the pay fixed for a probationer.

Second Part.

(1) Traverse computation and harmonizing of a village and its khandams, area not less than 3 square miles. Three months in Central office.

Computation of rectangular co-ordinates.

Harmonizing a main circuit of about 100 square miles with reference to a district origin.

Taking out values for trijunctions and preparation of a traverse chart for a ¼ degree sheet.

Field. Sub-section charge. Six months.

At the end of this period, the officer in charge concerned should report how the probationer has done in comparison with other more experienced sub-section officers.

APPENDIX XII.

APPOINTMENT AND TRAINING OF ASSISTANT DIRECTORS OF SURVEY.

[Annexure to G.O. No. 1527, Press, dated 3rd October 1925.]

Appointments to the gazetted grades of the Survey department are made either by promotion of Sub-Assistant Directors or in exceptional cases by direct appointment as probationers from outside the department.

A probationary Assistant Director will have to undergo the course of training prescribed for probationary head surveyors and will afterwards undergo an examination in survey in the Central Survey Office.

The questions will be taken from the following books :—

Madras Survey Manual.
Boileau's Traverse Tables.
Chamber's Mathematical Tables.

Auxiliary Tables of the Survey of India, viz., Explanation and use of the following tables X, XI, XII, XVI, XVII, XVIII, XIX, XXI, XXII, XXVI, XXVII, XXVIII and XLVII.

The probationer should, within his term of probation, pass the departmental Head Surveyor and Sub-Assistant's test and, if he be a European or an Anglo-Indian, also the third-class Vernacular test in one of the recognized languages of the Presidency.

An Assistant Director of Survey whether appointed by promotion from the grade of Sub-Assistant Director or in an exceptional case by direct appointment as probationer from outside the department, will be attached to a Settlement Party for four months in order that he may become acquainted with the general principles and methods of land revenue administration. The course of instruction will be as follows :—

(i) The first fifteen days should be devoted to the study of the following books :—

(1) Madras Administration Report for 1921–22, Chapter I, paragraphs 138–232 (inclusive).

(2) Standing Orders of the Board of Revenue, Chapters I (except the orders relating to mining), II, V, VIII, IX, XIV and XX (Orders 201, 202 and 202-A).

(3) Manuals of Village and Taluk Accounts.

(4) Resettlement Manual.

(5) Revenue Acts and Regulations—

(*a*) Madras Regulations XXV and XXVI of 1802.

(*b*) Madras Act V of 1882, Chapters I, II, III and IV only.

(*c*) Madras Act I of 1908, Chapters I, II, XI and XII and the executive rules printed in B.P. No. 4, dated 3rd February 1925, and the legal rules in B.P. No. 211, dated 22nd April 1910, as revised in G.O. No. 2495, Law (General), dated 13th October 1923.

(ii) *Revision of registration (special staff work, etc.) and settlement in ryotwari areas—Two months.*—(*a*) Principles on which ryotwari holdings are registered and transferred.

(*b*) Preparation of records for rough patta objection hearing; hearing of objections and preparation, check and inspection of miscellaneous accounts; and

(*c*) General principles of revenue settlement and resettlement.

(iii) *Registers prepared by a Settlement Party—Fifteen days.*—Method and principles on which the registers are prepared; use of these registers by the district revenue officials.

(iv) *Maintenance—Ten days.*—Preparation of demarcation sketches, stone registers, inspection of stones, incorporation of sub-divisions in field measurement books and recording of changes in the other maintained records.

(v) *Record of rights and settlement of rents—Proprietary estates—Twenty days.*—(*a*) General principles of the preparation of a record of rights and settlement of rents in proprietary estates.

(*b*) Registers prepared by the Revenue Officer; method and principles on which they are prepared; use of these registers by Government and Zamindari Officials; and

(*c*) Classes and treatment of Government lands in non Government villages and Government Revenue accounts maintained in connection with them.

At the end of the course, the Special Settlement Officer should examine the Assistant Director in the subjects prescribed above and report the result to the Board.

APPENDIX NO. XIII.

CORRECTIONS AND ALTERATIONS IN COMPLETED SURVEY RECORDS.

1. Maps and records once finished and sent to the Central Survey Office cannot be returned to Survey Parties for correction except under special circumstances which should be reported in detail to the Deputy Director of Survey and Land Records.

2. When correction is necessary, the following course should be followed :—

(i) CHANGES IN VILLAGE BOUNDARIES.

3. Theodolite stations should not be moved unless they lie off the new boundary. In this case a fresh traverse should be run, connecting it with the old stations in site on either side. Field stones should be used to mark the boundary as altered. The space included between the original and corrected boundaries should, wherever possible, be treated as an additional survey field and given the last number in the village concerned, irrespective of its position. Where the alteration is so slight as not to allow of an additional field being formed, the space should be included with the adjoining field or fields by removing existing field stones and planting new stones as may be necessary.

(ii) CHANGES IN FIELD BOUNDARIES.

4. The map should not be altered. The only records which should require alteration are—

1. Field measurement book.
2. Field register.
3. Area list.

5. If a portion of field No. 1 is found, after the map is finished, to belong to the owner of the adjoining field No. 2, it should not be included in field No. 2, but made a subdivision of field No. 1.

6. Immediately after the alterations on the ground are made, the necessary corrections should be made in red ink in all the records and maps affected and a memorandum of alterations sent to the Central Survey Office, in Form No. 97. The reason for the alterations should be fully explained.

(iii) CHANGES DUE TO DECREES OF COURTS.

7. The following is the procedure adopted for correction of boundaries in pursuance of decrees of Civil Courts.

8. When decrees have been passed by Civil Courts affecting boundaries demarcated by the Survey department, the Courts themselves execute

their decrees ; and where the decree alters a survey boundary line, the Amin of the Court entrusted with the execution, plants the new boundary marks and removes the old ones where necessary.

9. He prepares a tracing from the village map and marks upon it the alteration made by him in execution. This tracing or sketch is then returned to the Court along with the warrant of execution by the Amin.

10. A copy of the decree, together with the Amin's tracing or sketch of the alteration, will be sent immediately after execution to the Deputy Director of Survey and Land Records through the District Judge. The Survey department will then make the necessary alterations in the records concerned.

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